

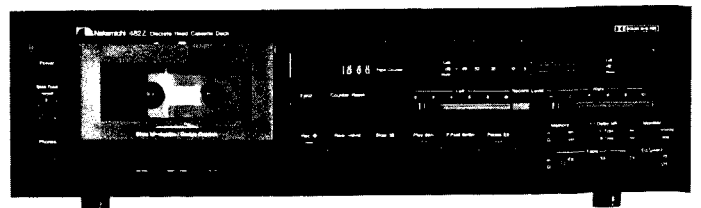
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# Service Manual

# Nakamichi 482Z

Discrete Head Cassette Deck



58

## CONTENTS

<b>1. General</b> .....	<b>3</b>
<b>2. Removal Procedures</b> .....	<b>4</b>
2. 1. Cassette Case Cover Ass'y .....	4
2. 2. Top Cover Ass'y .....	4
2. 3. Bottom Cover Ass'y .....	4
2. 4. Front Panel Ass'y .....	5
2. 5. Headphone Jack Ass'y .....	5
2. 6. Mechanism Ass'y .....	5
2. 7. Level Indicator Ass'y, Lamp P.C.B. Ass'y and Indicator P.C.B. Ass'y .....	5
2. 8. Logic P.C.B. Ass'y, Headphone Switch P.C.B. Ass'y and MPX Filter Switch P.C.B. Ass'y .....	5
2. 9. Main P.C.B. Ass'y .....	6
2. 10. Control Switch Holder Ass'y .....	6
2. 11. Switch P.C.B. Ass'y .....	6
2. 12. Volume P.C.B. Ass'y and Control Switch P.C.B. Ass'y .....	6
2. 13. Bias Oscillator P.C.B. Ass'y .....	6
2. 14. Rear Panel Ass'y, Power Transformer and Power Switch .....	8
2. 15. Cassette Case Ass'y and Cover Plate Ass'y .....	8
2. 16. Tape Counter Ass'y .....	8
2. 17. Capstan Motor Ass'y and Flywheel Ass'y .....	8
2. 18. Sub Mechanism Chassis Ass'y .....	9
2. 19. Control Motor Ass'y and Reel Motor Ass'y .....	9
2. 20. Cam Control Volume .....	9
2. 21. Reel Hub Ass'y and Idler Ass'y .....	9
2. 22. Cam Drive Gear and Control Cam .....	10
2. 23. Head Mount Base Ass'y .....	10
2. 24. Pressure Roller Ass'y and Erase Head .....	10
2. 25. Playback Head Ass'y and Record Head Ass'y .....	10
<b>3. Measurement Instruments</b> .....	<b>11</b>
<b>4. Mechanical Adjustments</b> .....	<b>12</b>
4. 1. Mechanism Control Cam Adjustment .....	12
4. 2. Tape Speed Adjustment .....	13
4. 3. Record Head and Playback Head Tilt Adjustment .....	13
4. 4. Head Base Stroke Adjustment .....	15
4. 5. Tape Guides Adjustment and Erase Head Stroke Adjustment .....	16
4. 6. Erase Head Height and Tilt Adjustment .....	17
4. 7. Back Tension Adjustment .....	18
4. 8. Playback Head and Record Head Height Adjustment and Azimuth Alignment .....	19
4. 9. Record Head Stroke Adjustment .....	20
4. 10. Tape Travelling Adjustment .....	21
4. 11. Flywheel Holder Adjustment .....	21
4. 12. Eject Wire Adjustment .....	22
4. 13. Lubrication .....	22
<b>5. Parts Location for Electrical Adjustment</b> .....	<b>23</b>
<b>6. Electrical Adjustments and Measurements</b> .....	<b>24</b>
6. 1. Adjustment and Measurement Instructions .....	24
6. 2. Playback Frequency Response Adjustment .....	27
6. 3. Dolby NR Circuit Check .....	28
<b>7. Mounting Diagrams and Parts List</b> .....	<b>29</b>
7. 1. Main P.C.B. Ass'y .....	29
7. 2. Logic P.C.B. Ass'y .....	33
7. 3. Volume P.C.B. Ass'y .....	35
7. 4. Lamp P.C.B. Ass'y .....	35
7. 5. MPX Filter Switch P.C.B. Ass'y .....	35
7. 6. Headphone Switch P.C.B. Ass'y .....	35
7. 7. Bias Tune Volume P.C.B. Ass'y .....	35
7. 8. Indicator P.C.B. Ass'y .....	35

7. 9.	Switch P.C.B. Ass'y . . . . .	35
7. 10.	Shut-off P.C.B. Ass'y . . . . .	36
7. 11.	Control P.C.B. Ass'y . . . . .	36
7. 12.	Control Switch P.C.B. Ass'y . . . . .	36
7. 13.	Bias Oscillator P.C.B. Ass'y . . . . .	36
<b>8.</b>	<b>Mechanism Ass'y and Parts List . . . . .</b>	<b>37</b>
8. 1.	Synthesis . . . . .	37
8. 2.	Front Panel Ass'y (A01) . . . . .	37
8. 3.	Synthesis Mechanism Ass'y (A02) . . . . .	38
8. 4.	Meter Escutcheon Ass'y (B01) . . . . .	38
8. 5.	Control Switch Holder Ass'y (B02) . . . . .	39
8. 6.	Headphone Jack Ass'y (B03) . . . . .	39
8. 7.	Mechanism Ass'y 482Z (B04) . . . . .	39
8. 8.	Chassis Ass'y (B05) . . . . .	40
8. 9.	Flywheel Holder Ass'y (C01) . . . . .	40
8. 10.	Sub Mechanism Chassis Ass'y (C02) . . . . .	41
8. 11.	Main Mechanism Chassis Ass'y (C03) . . . . .	42
8. 12.	Rear Panel Ass'y (D01) . . . . .	43
8. 13.	Capstan Motor Ass'y (E01) . . . . .	44
8. 14.	Reel Motor Ass'y (F01) . . . . .	44
8. 15.	Control Motor Ass'y (F02) . . . . .	44
8. 16.	Head Mount Base Ass'y (G01) . . . . .	44
8. 17.	Supply Pressure Roller Ass'y (G02) . . . . .	44
8. 18.	Take-up Pressure Roller Ass'y (G03) . . . . .	45
8. 19.	Head Base Ass'y C (G04) . . . . .	45
8. 20.	Cassette Case Holder L Ass'y (G05) . . . . .	45
8. 21.	Cassette Case Holder R Ass'y (G06) . . . . .	45
8. 22.	Auto Shut-off Ass'y (G07) . . . . .	45
8. 23.	Pneumatic Damper Ass'y (G08) . . . . .	45
8. 24.	P-8L Playback Head Ass'y (H01) . . . . .	46
8. 25.	R-8L Record Head Ass'y (H02) . . . . .	46
<b>9.</b>	<b>Overall Timing Chart . . . . .</b>	<b>47</b>
<b>10.</b>	<b>Eq. Amp. Frequency Response . . . . .</b>	<b>48</b>
10. 1.	Playback Frequency Response . . . . .	48
10. 2.	Record Current Frequency Response . . . . .	48
<b>11.</b>	<b>Wiring Diagram . . . . .</b>	<b>49</b>
<b>12.</b>	<b>Block Diagrams . . . . .</b>	<b>51</b>
12. 1.	Amplifier Section . . . . .	51
12. 2.	Mechanism Control Section . . . . .	52
<b>13.</b>	<b>Schematic Diagrams . . . . .</b>	<b>53</b>
13. 1.	IC Block Diagrams . . . . .	53
13. 2.	Attention to Servicemen . . . . .	53
13. 3.	Mechanism Control Section . . . . .	54
13. 4.	Amplifier Section . . . . .	56
<b>14.</b>	<b>Specifications . . . . .</b>	<b>58</b>

## 1. GENERAL

### 1.1. Control Functions

The Nakamichi 482Z control functions are shown below:

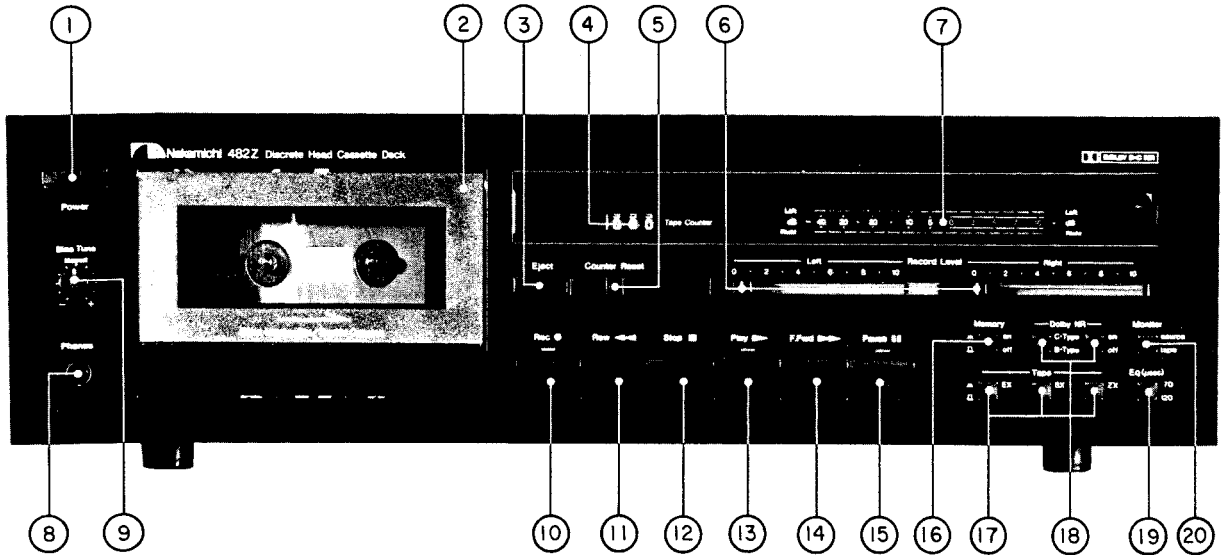


Fig. 1.1 Front View

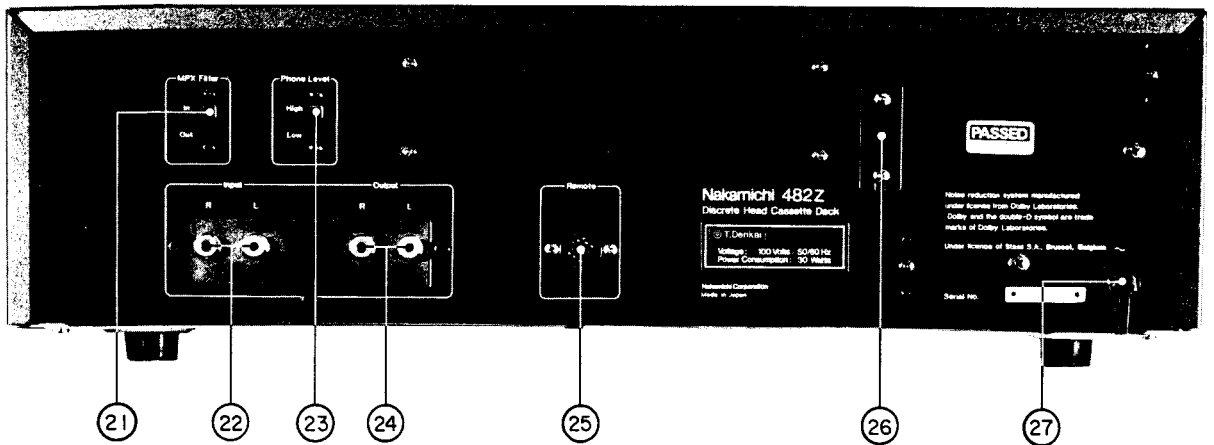


Fig. 1.2 Rear View

- |                         |                          |                             |
|-------------------------|--------------------------|-----------------------------|
| 1. Power Switch         | 10. Record Button        | 19. Eq. Switch              |
| 2. Cassette Lid         | 11. Rewind Button        | 20. Monitor Switch          |
| 3. Eject Button         | 12. Stop Button          | 21. MPX Filter Switch       |
| 4. Tape Counter         | 13. Play Button          | 22. Input Jacks             |
| 5. Counter Reset Button | 14. Fast-Forward Button  | 23. Headphone Level Switch  |
| 6. Input Level Controls | 15. Pause Button         | 24. Output Jacks            |
| 7. Peak Level Meters    | 16. Tape Memory Switch   | 25. Remote Control Socket   |
| 8. Headphone Jack       | 17. Tape Selector Switch | 26. Voltage Selector Switch |
| 9. Bias Tune Control    | 18. Dolby NR Switch      | 27. Power Cord              |

### 1.2. Voltage Selector

Voltage Selector is installed on the rear panel for Other Version of the Nakamichi 482Z.

This voltage selector can select either 120 V or 220-240 V at customer's disposal.

## 2. REMOVAL PROCEDURES

### 2.1. Cassette Case Cover Ass'y

Refer to Fig. 2.1.

- (1) Press the Eject Button to open the Cassette Case Ass'y.
- (2) Pull out F01 (Cassette Case Cover Ass'y) upwardly.

### 2.2. Top Cover Ass'y

Refer to Fig. 2.1.

- (1) Remove F02 and F03, then disassemble F04 (Top Cover Ass'y).

### 2.3. Bottom Cover Ass'y

Refer to Fig. 2.1.

- (1) Remove F05, then disassemble F06 (Bottom Cover Ass'y).

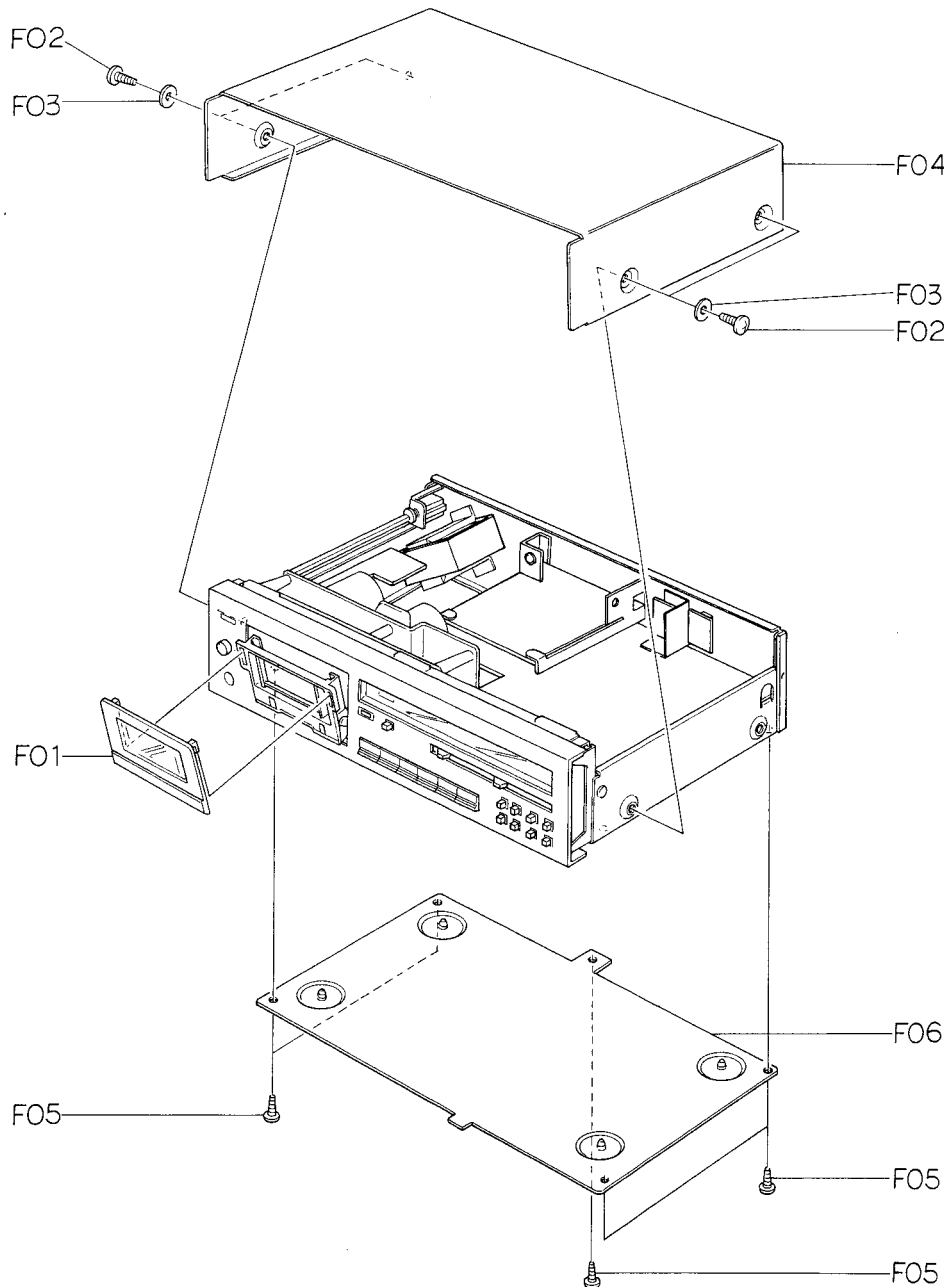


Fig. 2.1

#### 2.4. Front Panel Ass'y

Refer to Fig. 2.2.

- (1) Refer to Fig. 2.1. Remove Top Cover Ass'y and Bottom Cover Ass'y referring to items 2.2 and 2.3.
- (2) Pull out F01 (Volume Knobs) and F02 (Bias Tune Volume Knob).
- (3) Remove F03 (Power Switch Joint Bar) by releasing the self-interlocking pin of the Power Switch Joint Bar from Power Switch, and turn F03 (Power Switch Joint Bar) by 90° either clockwise or counterclockwise, then disassemble F03 (Power Switch Joint Bar) from the Power Switch Knob Ass'y.
- (4) Remove F04, then disassemble F05 (Front Panel Ass'y).

#### 2.5. Headphone Jack Ass'y

Refer to Fig. 2.2.

- (1) Remove Front Panel Ass'y referring to item 2.4.
- (2) Remove F06, then disassemble F07 (Headphone Jack Ass'y).
- (3) Remove F08 and F09, then disassemble F10 (Bias Tune Volume P.C.B. Ass'y).
- (4) Remove F11 and F12, then disassemble F13 (Headphone Jack).

#### 2.6. Mechanism Ass'y

Refer to Fig. 2.2.

- (1) Remove Front Panel Ass'y referring to item 2.4.
- (2) Remove F14 and F15, then disassemble F16 (Mechanism Ass'y including 5 connectors).

#### 2.7. Level Indicator Ass'y, Lamp P.C.B. Ass'y and Indicator P.C.B. Ass'y

Refer to Fig. 2.2.

- (1) Remove Front Panel Ass'y referring to item 2.4.
- (2) Remove F17 (Level Indicator Ass'y) by releasing self-interlocking pins of Level Indicator Ass'y.
- (3) Remove F18, then disassemble F19 (Lamp P.C.B. Ass'y).
- (4) Remove F20, then disassemble F21 (Shield Case).
- (5) Remove F22, then disassemble F23 (Indicator P.C.B. Ass'y).

#### 2.8. Logic P.C.B. Ass'y, Headphone Switch P.C.B. Ass'y and MPX Filter Switch P.C.B. Ass'y

Refer to Fig. 2.3.

- (1) Refer to Fig. 2.1. Remove Top Cover Ass'y referring to item 2.2.
- (2) Remove F01, then disassemble F02 (Logic P.C.B. Ass'y).
- (3) Remove F03, then disassemble F04 (Headphone Switch P.C.B. Ass'y and Shield Case).
- (4) Remove F05, then disassemble F06 (MPX Filter Switch P.C.B. Ass'y).

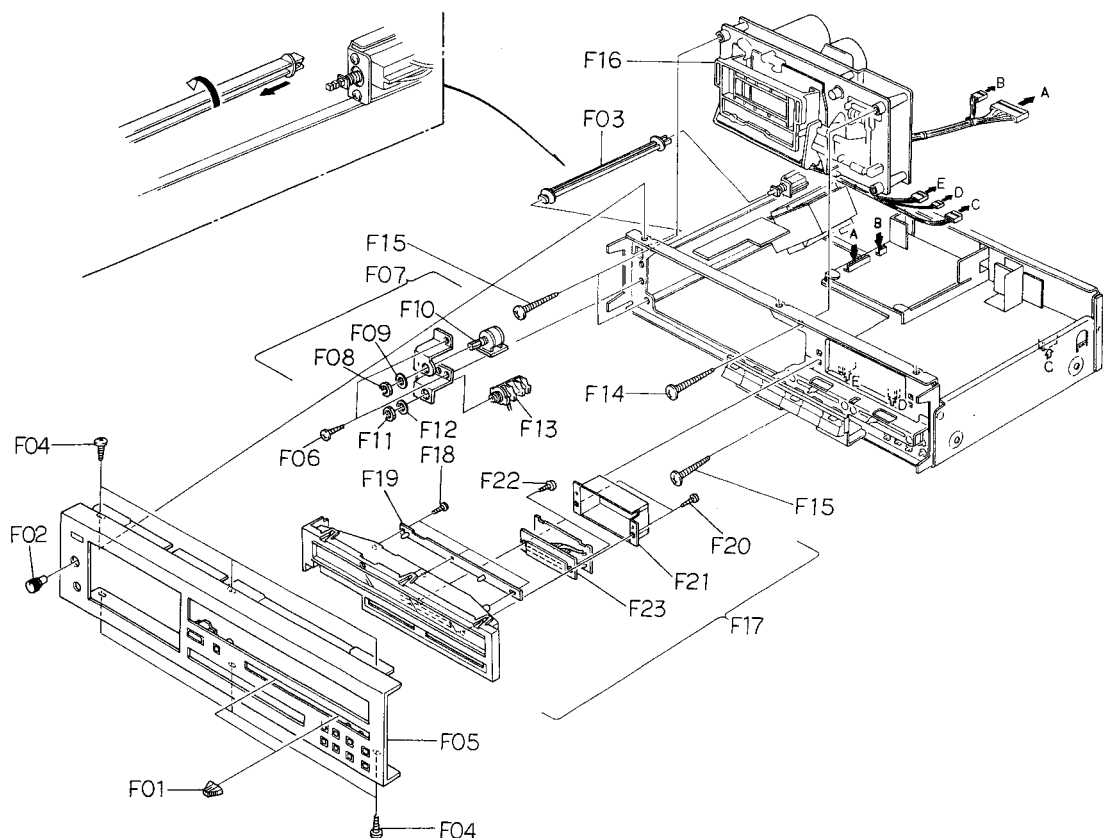


Fig. 2.2

### 2.9. Main P.C.B. Ass'y

Refer to Fig. 2.3.

- (1) Refer to Fig. 2.2. Remove Front Panel Ass'y, Logic P.C.B. Ass'y and Headphone Switch P.C.B. Ass'y referring to items 2.4 and 2.8.
- (2) Remove 3 connectors and the wires connected by wrapping from the F12 (Main P.C.B. Ass'y).
- (3) Remove F07, F08, F09, F10, F11 and F12, then disassemble F13 (Main P.C.B. Ass'y).

### 2.10. Control Switch Holder Ass'y

Refer to Fig. 2.3.

- (1) Refer to Fig. 2.2. Remove Level Indicator Ass'y referring to item 2.7.
- (2) Remove F14, then disassemble F15 (Control Switch Holder Ass'y).

### 2.11. Switch P.C.B. Ass'y

Refer to Fig. 2.3.

- (1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.4.
- (2) Remove F16, then disassemble F17 (Switch P.C.B. Ass'y).

### 2.12. Volume P.C.B. Ass'y and Control Switch P.C.B. Ass'y

Refer to Fig. 2.3.

- (1) Remove Control Switch Holder Ass'y referring to item 2.10.
- (2) Remove F18, then disassemble F19 (Volume P.C.B. Ass'y).
- (3) Remove F20, then disassemble F21 (Control Button Spring).
- (4) Remove F22 (Control Button Shaft), then disassemble F23 (Control Buttons).
- (5) Remove F24, then disassemble F25 (Control Switch P.C.B. Ass'y).

### 2.13. Bias Oscillator P.C.B. Ass'y

Refer to Fig. 2.3.

- (1) Refer to Fig. 2.1. Remove Top Cover Ass'y referring to item 2.2.
- (2) Remove F26, then disassemble F27 (Bias Oscillator P.C.B. Ass'y).

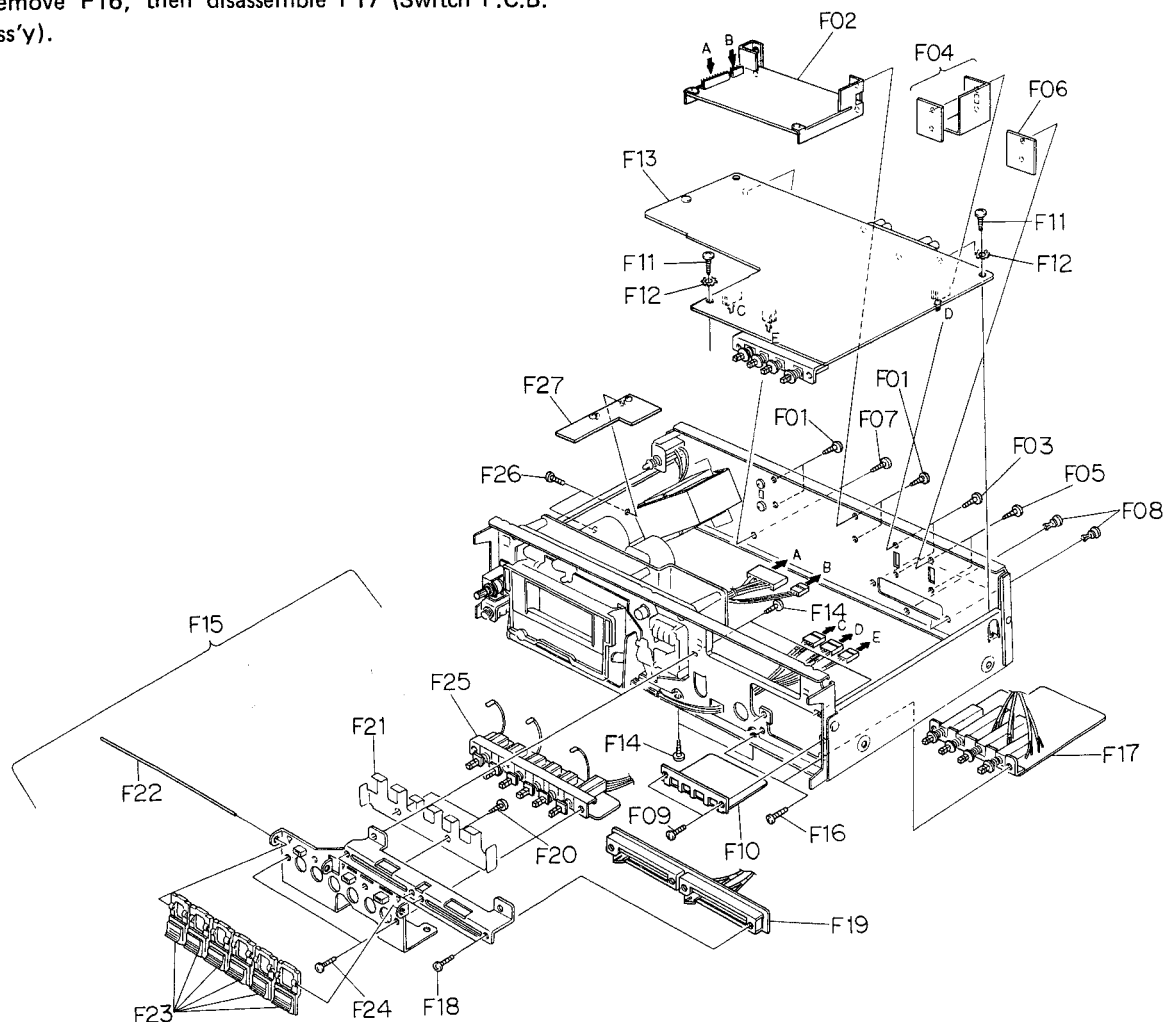


Fig. 2.3

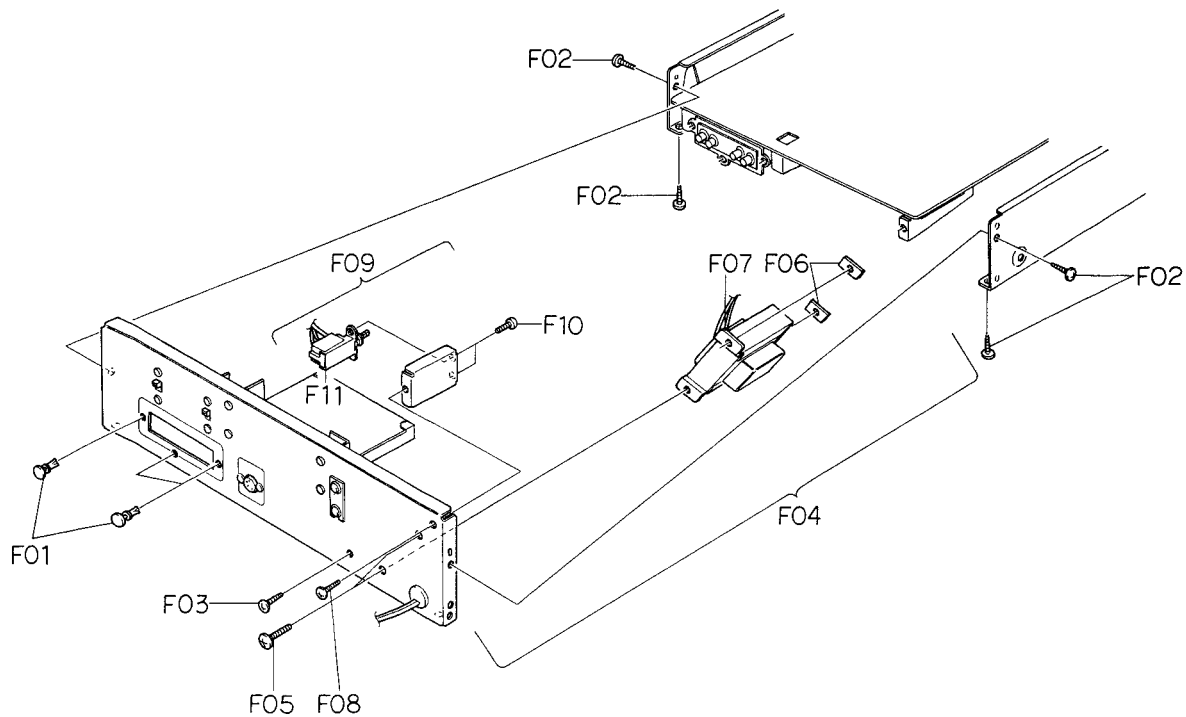


Fig. 2.4

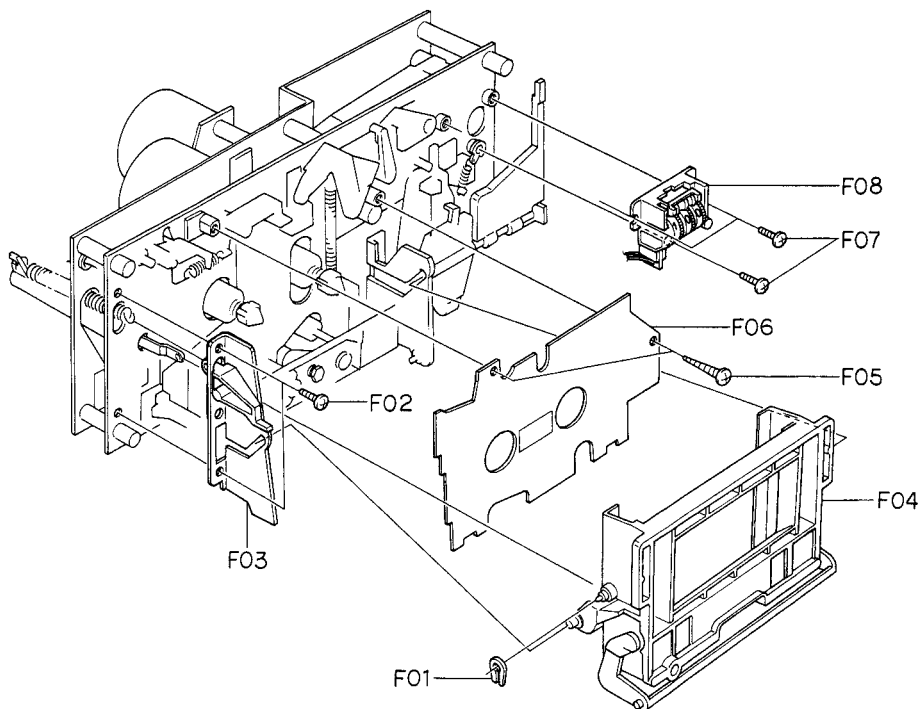


Fig. 2.5



#### 2.14. Rear Panel Ass'y, Power Transformer and Power Switch

Refer to Fig. 2.4.

- (1) Refer to Fig. 2.1. Remove Top Cover Ass'y and Bottom Cover Ass'y referring to items 2.2 and 2.3.
- (2) Remove F01, F02 and F03, then disassemble F04 (Rear Panel Ass'y).
- (3) Remove F05 and F06, then disassemble F07 (Power Transformer).
- (4) Remove Power Switch Joint Bar by releasing the self-interlocking pin of the Power Switch Joint Bar from Power Switch and F08, then disassemble F09 (Power Switch Holder Ass'y).
- (5) Remove F10, then disassemble F11 (Power Switch).

#### 2.15. Cassette Case Ass'y and Cover Plate Ass'y

Refer to Fig. 2.5.

- (1) Refer to Fig. 2.2. Remove Mechanism Ass'y referring to item 2.6.
- (2) Press the Eject Button to open the Cassette Case Ass'y.
- (3) Remove F01, then disassemble the piston of the Pneumatic Damper Ass'y.
- (4) Remove F02 and F03 (Cassette Case Holder L Ass'y), then disassemble F04 (Cassette Case Ass'y).
- (5) Remove F05, then disassemble F06 (Cover Plate Ass'y).

#### 2.16. Tape Counter Ass'y

Refer to Fig. 2.5.

- (1) Refer to Fig. 2.2. Remove Level Indicator Ass'y referring to item 2.7.
- (2) Remove F07, then disassemble F08 (Tape Counter Ass'y).

#### 2.17. Capstan Motor Ass'y and Flywheel Ass'y

Refer to Fig. 2.6.

- (1) Refer to Fig. 2.2. Remove Mechanism Ass'y referring to item 2.6.
- (2) Remove F01 and F02, then disassemble F03 (Flywheel Holder Ass'y) and F08 (Capstan Belt).
- (3) Remove F04, then disassemble F05 (Capstan Motor Ass'y).
- (4) Remove F06, then disassemble F07 (Control P.C.B. Ass'y).
- (5) Remove F09 (Supply Flywheel Ass'y), then disassemble F10 (Take-up Flywheel Ass'y).
- (6) After removing both Flywheel Assemblies, disassemble F11 (Thrust Washer 3 mm), F12 (Thrust Washer 2.6 mm), F13 (Flange Thrust Caps) and F14 (Flange Thrust Springs).

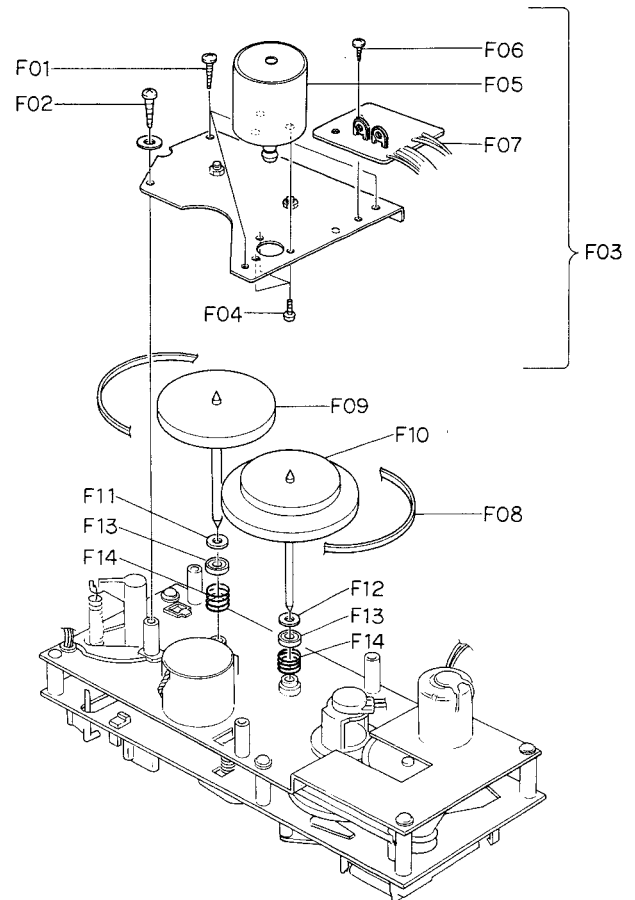


Fig. 2.6

## 2.18. Sub Mechanism Chassis Ass'y

Refer to Fig. 2.7.

- (1) Refer to Fig. 2.6. Remove Flywheel Assemblies referring to item 2.17.
- (2) Remove F01 and F02, then disassemble F03 (Sub Mechanism Chassis Ass'y).

## 2.19. Control Motor Ass'y and Reel Motor Ass'y

Refer to Fig. 2.7.

- (1) Remove Sub Mechanism Chassis Ass'y referring to item 2.18.
- (2) Remove F04, then disassemble F05 (Control Motor Ass'y).
- (3) Remove F06, then disassemble F07 (Reel Motor Ass'y).

## 2.20. Cam Control Volume

Refer to Fig. 2.7.

- (1) Remove Sub Mechanism Chassis Ass'y referring to item 2.18.
- (2) Remove F08, then disassemble F09 (Volume Coupler).
- (3) Remove F10, then disassemble F11 (Cam Control Volume).

## 2.21. Reel Hub Ass'y and Idler Ass'y

Refer to Fig. 2.7.

- (1) Remove Sub Mechanism Chassis Ass'y referring to item 2.18.
- (2) Remove F12 (Reel Hub Heads), then disassemble F13 (Reel Hub B Assemblies), F14 (Reel Hub Take-up

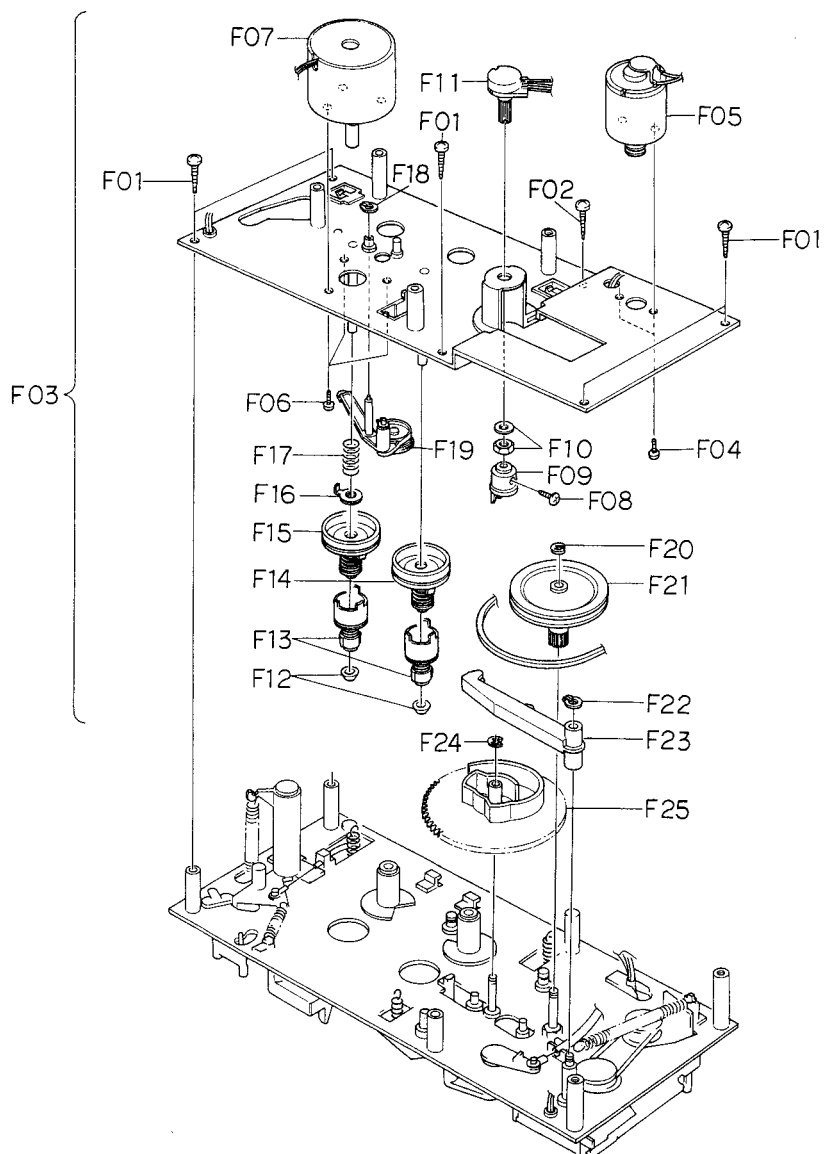


Fig. 2.7

- Ass'y), F15 (Reel Hub Supply Ass'y), F16 (Back Tension Ass'y) and F17 (Back Tension Spring).  
 (3) Remove F18, then disassemble F19 (Idler Ass'y).

### 2.22. Cam Drive Gear and Control Cam

Refer to Fig. 2.7.

- (1) Remove Sub Mechanism Chassis Ass'y referring to item 2.18.
- (2) Remove F20, then disassemble F21 (Cam Drive Gear).
- (3) Remove F22, then disassemble F23 (Counter-Load Arm Ass'y).
- (4) Remove F24, then disassemble F25 (Control Cam).

### 2.23. Head Mount Base Ass'y

Refer to Fig. 2.8.

- (1) Refer to Fig. 2.5. Remove Cassette Case Ass'y referring to item 2.15.
- (2) Remove F01, then disassemble F02 (Head Mount Base Ass'y).

### 2.24. Pressure Roller Ass'y and Erase Head

Refer to Fig. 2.8.

- (1) Remove Head Mount Base Ass'y referring to item 2.23.
- (2) Remove F03 and a washer, then disassemble F04 (Supply Pressure Roller Ass'y).
- (3) Remove F05, then disassemble F06 (Erase Head).
- (4) Remove F07 and a washer, then disassemble F08 (Take-up Pressure Roller Ass'y).

### 2.25. Playback Head Ass'y and Record Head Ass'y

Refer to Fig. 2.8.

- (1) Remove Head Mount Base Ass'y referring to item 2.23.
- (2) Turn F09 by  $90^\circ$  by pushing it, then disassemble F10 (Playback Head Ass'y).
- (3) Turn F11 by  $90^\circ$  by pushing it, then disassemble F12 (Record Head Ass'y).

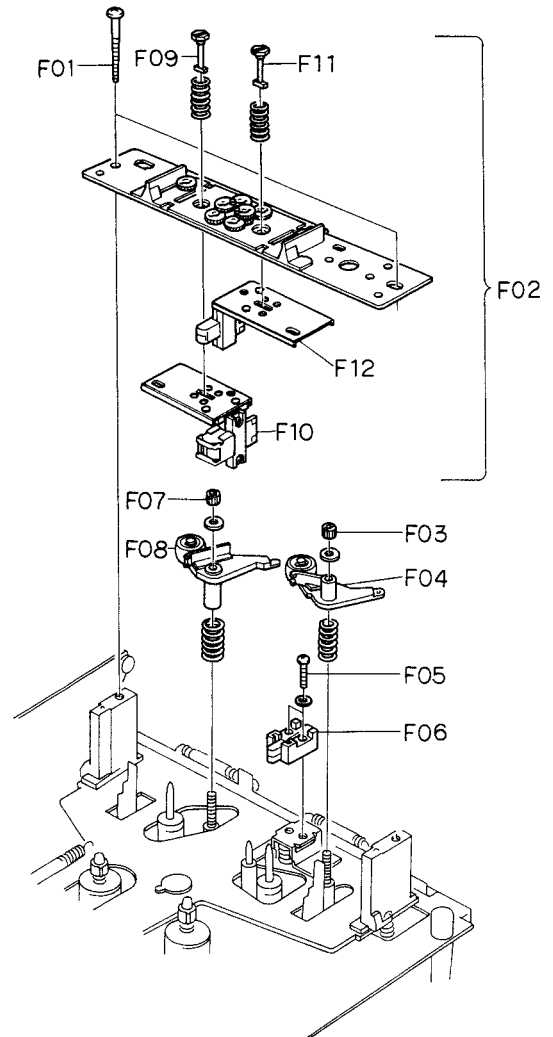


Fig. 2.8

### 3. MEASUREMENT INSTRUMENTS

- (1) Audio Generator (20 Hz – 200 kHz)
- (2) AC Millivolt Meter (with dB measures)
- (3) Oscilloscope (DC – 5 MHz)
- (4) Distortion Meter
- (5) Speed & Wow/Flutter Meter
- (6) Frequency Counter (DC – 1 MHz)
- (7) Ohm Meter
- (8) DC Volt Meter
- (9) AC Volt Meter
- (10) Torque Gauge (DA09013A)
- (11) 15 kHz Azimuth Tape (DA09004A)
- (12) 3 kHz Speed & Wow/Flutter Tape (DA09006A)
- (13) 1 kHz Track Alignment Tape (DA09007A)
- (14) 400 Hz Level Tape (DA09005A)
- (15) 20 kHz PB Frequency Response Tape (DA09001A)
- (16) 15 kHz PB Frequency Response Tape (DA09002A)
- (17) 10 kHz PB Frequency Response Tape (DA09003A)
- (18) Reference EXII Tape (DA09066A)
- (19) Reference SX Tape (DA09025A)
- (20) Reference ZX Tape (DA09037A)
- (21) Tilt Check Gauge M-9039 (DA09039A)
- (22) EH Tilt Check Gauge M-9040 (DA09040A)
- (23) EH Stroke Check Gauge M-9051 (DA09051A)
- (24) Stroke Check Gauge M-9047 (DA09047B)
- (25) Record Head Mounting Gauge M-9048 (DA09048A)
- (26) Back Tension Gauge (DA09055A)
- (27) Tension Arm Adjustment Cassette (DA09056A)
- (28) Audio Analyzer T-100  
(including Distortion, Wow/Flutter, Speed, Oscillator and dB meters)

Note: (10) – (28) are the products of Nakamichi Corporation.

## 4. MECHANICAL ADJUSTMENTS

### 4.1. Mechanism Control Cam Adjustment

Before adjustment, disassemble the Front Panel Ass'y, then remove the Cover Plate Ass'y referring to items 2.4 and 2.15.

#### (1) Offset Adjustment of Control Motor Driver

(a) Refer to Figs. 4.1 and 4.2.

Adjust VR602 and VR603 on the Control P.C.B. Ass'y to locate approximately at the middle of the variable range. Then turn ON the Power switch.

VR602 (for cam position stop)

VR603 (for cam position play)

(b) Press the Stop button to set the N-482Z in Stop mode. Adjust VR602 (for stop) so that the "S" mark on the Cam corresponds to the pointer on the mechanism chassis.

(c) Press the Play button to set the N-482Z in Playback mode.

(Cam will rotate, and the position marked with "PY" comes to the pointer.)

Adjust VR603 (for play) so that the "PY" mark on the Cam corresponds to the pointer.

(d) Repeat above (b) and (c) 2 – 3 times so that the "S" and "PY" marks on the Cam correspond to the pointer accurately in Stop and Playback modes respectively.

(This adjustment is required because the position adjusted by one volume will be slightly changed when the other volume is adjusted.)

(e) Set the N-482Z in F.F. or Pause mode by pressing each button and check to insure that the pointer is in a range of "F" or "PS" mark respectively.

(f) If out of the range, precise adjustment for each position according to "(2) Offset Fine Adjustment of Control Motor Driver" will be required.

#### (2) Offset Fine Adjustment of Control Motor Driver

Adjust only if a satisfactory result is not obtained in "(1) Offset Adjustment of Control Motor Driver". This adjustment is made by changing the value of the fixed resistors on the Logic P.C.B. Ass'y.

Note: The value of voltage is typical value.

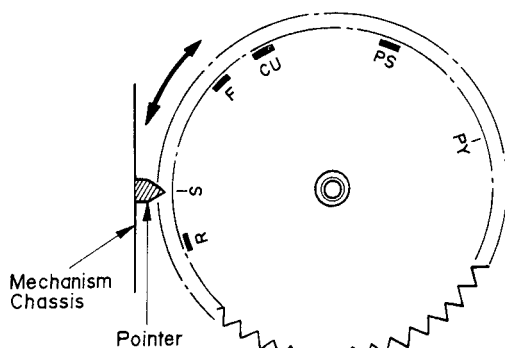


Fig. 4.1

#### (a) Observation Point of Reference Voltage

Observe the each voltage at the sliding contact of the Cam Control Volume VR601 (10 kΩ) in Stop, Fast (F.F. or Rew.), Pause and Playback modes.

#### (b) Reference Voltage

Reference voltage at the sliding contact of VR601 (Cam Control Volume) in each mode is as follows:

Mode	Reference Voltage (Typical Value)
Stop	15 V
Fast (F.F./Rew.)	13.5 V
Pause	10 V
Play	7.5 V

} 1.5 V ±0.25 V  
} 2.5 V ±0.4 V

#### (c) Resistors for Adjustment

Mode	Ref. No.	Typical Value
Stop	R466, R464	9.1 kΩ (F), 15 kΩ (F)
Fast (F.F./Rew.)	R463	56 kΩ
Pause	R410	680 kΩ
Play	R411	120 kΩ

#### (d) Adjustment Procedures

1) Press the Stop button to set the N-482Z in Stop mode. Adjust the value of R466 and R464 to obtain 15 V (±0.6 V) at the sliding contact of VR601.

Note: When R466 and R464 are adjusted, the reference voltage in Fast (F.F. or Rew.) mode is changed. Therefore, re-check of the reference voltage in Fast (F.F. or Rew.) mode is required. If the reference voltage is out of the range, readjustment of R463 according to next step 2) is necessary.

2) Set the N-482Z in F.F. mode, then adjust the value of R463 so that the voltage of VR601 will become lower by 1.5 V (±0.25 V) than in Stop mode.

3) Press the Pause button to set the N-482Z in Pause mode.

Adjust the value of R410 to obtain 10 V (+0.4, -0.15 V) at the sliding contact of VR601.

4) Set the N-482Z in Playback mode, then adjust the value of R411 so that the voltage of VR601 will become lower by 2.5 V (±0.4 V) than in Pause mode.

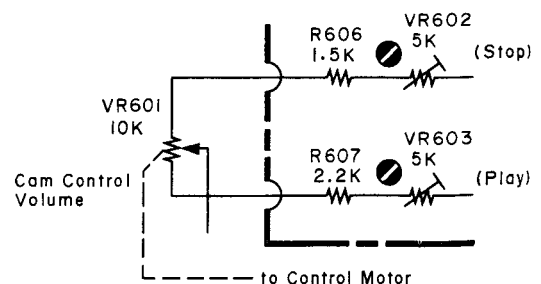


Fig. 4.2

**(3) Cam Timing Adjustment**

- (a) Remove the wires from the Control Motor terminals to set the motor open.
- (b) Without loading a cassette tape and with pressing the record protecting switch with your finger tip, press the Record and Play buttons to set the N-482Z in Record mode.
- (c) Turn the Cam and bring the "PY" mark toward the pointer by hand.  
Reel Motor will rotate before the "PY" mark reaches the pointer.  
Adjust the value of R452 so that the voltage at the sliding contact of VR601 becomes 9.7 V ( $\pm 0.3$  V) when Reel Motor starts rotation.
- (d) Observe the mute signal at the Q424 collector.  
Turn the Cam referring to above step (c) and check to insure that the voltage at the sliding contact of VR601 is 9.5 V ( $\pm 0.3$  V) when mute is released (mute signal changes from H to L).  
(This voltage is determined by the adjustment of R452 in above step (c).)
- (e) Observe the (Play + Pause)-Position signal at the Q446 collector.  
Turn the Cam referring to above step (c) and adjust the value of R445 to obtain 11.2 V ( $\pm 0.4$  V) at the sliding contact of VR601 when (Play + Pause)-Position signal changes from L to H (bias oscillation will begin).
- (f) Upon completion of above adjustment, re-connect wires to the motor terminals.

**4.2. Tape Speed Adjustment**

- (1) Remove the Top Cover Ass'y referring to item 2.2.
- (2) Connect a Frequency Counter to the Output Jack.
- (3) Load a 3 kHz Speed Wow/Flutter Tape (DA09006A) and play it back.
- (4) Referring to Fig. 4.3, adjust the Tape Speed Adjustment Volume (VR501) incorporated in the Capstan Motor to obtain 3,000 Hz on the Frequency Counter.  
CCW: Motor drives slowly.  
CW: Motor drives fast.

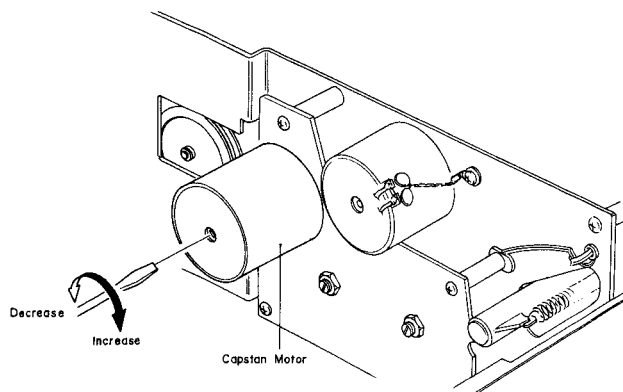


Fig. 4.3

**4.3. Record Head and Playback Head Tilt Adjustment**

Note: On items 4.3 – 4.9, refer to Fig. 4.4 flow chart. Refer to Figs. 4.5 and 4.6.

- (1) Load a Tilt Check Gauge M-9039 (DA09039A) in the N-482Z.
- (2) Clip the grounding terminal of the Tilt Check Gauge with one end of the cord with clip, and the chassis of the N-482Z with the other end.
- (3) Remove both of the Height Gears.
- (4) Set the N-482Z in Play mode. Check to insure whether the Beacons Playback Head "Upper" or "Lower" and Record Head "Upper" or "Lower" are illuminating. In order not to give damages onto the head surfaces, push both of slide knobs of the Gauge to the direction of arrow marks, then return them to the original place to be in contact with record head and playback head surfaces after Play mode is securely locked.
- (5) Check to insure freedom from contact between the Gauge and pad lifter.
- (6) Beacon Playback Head "Lower" will light on when height adjustment screw (P) turned clockwise but Playback Head "Upper" when counterclockwise. Adjust so that both "Upper" and "Lower" will light on even when you move the slide knob to the direction of an arrow mark and then return them to the original place.
- (7) Same procedures will apply to the Beacons Record Head "Upper" and "Lower", except for the height adjustment screw (R).
- (8) Set the N-482Z in Stop mode and fit both of the serrated Height Gears. Then set the N-482Z again in Play mode and insure all of the 4 Beacons are illuminating. If not, (3) through (7) will have to be repeated till satisfactory results are obtained.

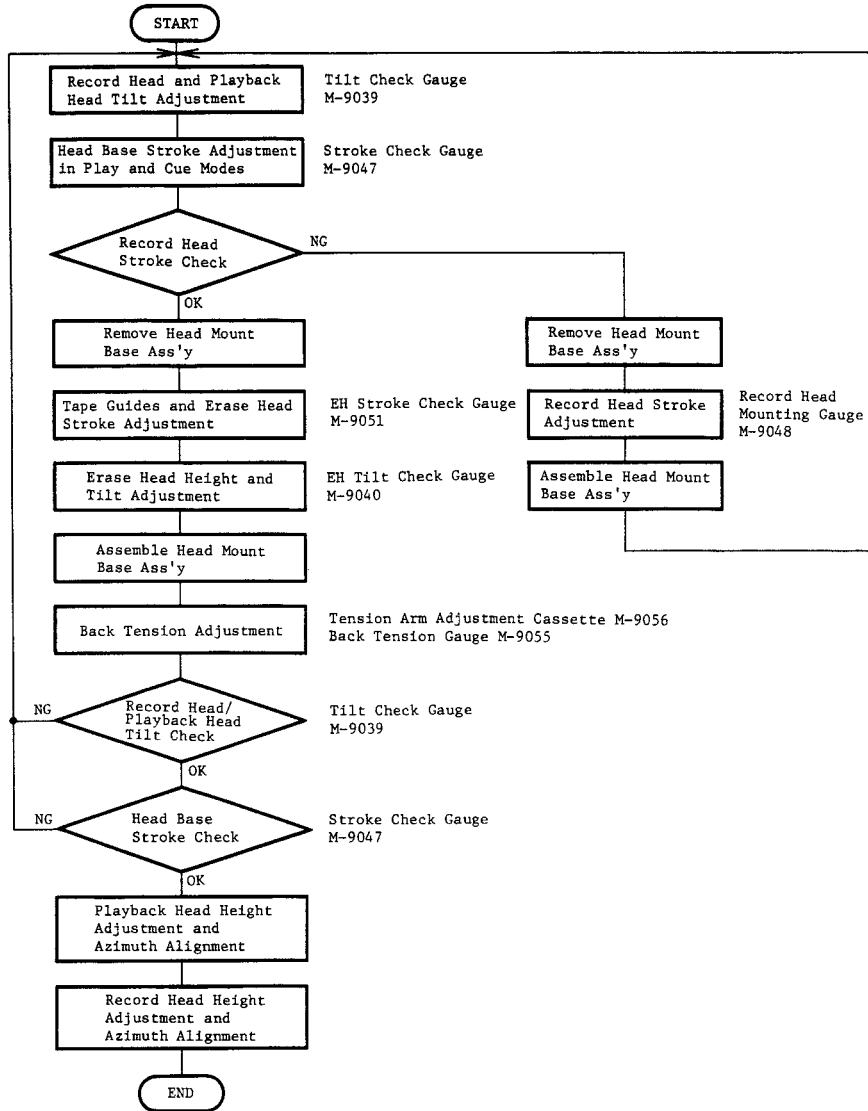


Fig. 4.4

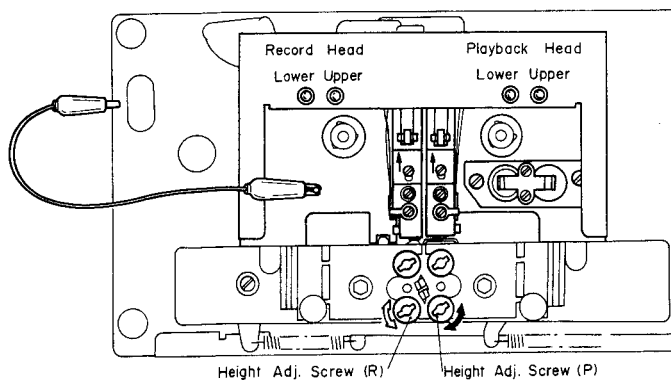


Fig. 4.5

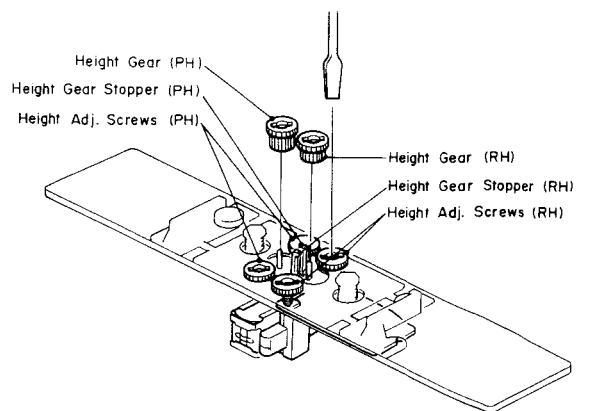


Fig. 4.6

#### 4.4. Head Base Stroke Adjustment

Note: Before you conduct this adjustment, adjust with a "Tilt Check Gauge" to insure freedom from tilt on the playback head and record head.

Refer to Fig. 4.7.

- (1) Load a Stroke Check Gauge M-9047 (DA09047B) in the N-482Z.
- (2) Move Record Head Indicator and Playback Head Indicator to the direction of arrow mark "A" with your finger tip and then set the N-482Z in Play mode. Then slowly release the Indicators and insure whether each of the Indicators is in contact with record and playback heads.
- (3) Check to insure whether the "P" pointer on the Playback Head Indicator locates between the 2 lines on the Indicator Plate.
- (4) If the playback head stroke is noted to be misaligned, adjustment can be made by moving the stroke adjuster assembled in the head base assembly (either forwardly or backwardly).
- (5) Check to insure whether the "P" pointer on the Playback Head Indicator locates between the 2 lines on the Record Head Indicator, thus check can be made on record head stroke.
- (6) If the record head stroke is noted to be misaligned, adjustment can be made with a Record Head Mounting Gauge M-9048 (DA09048A).

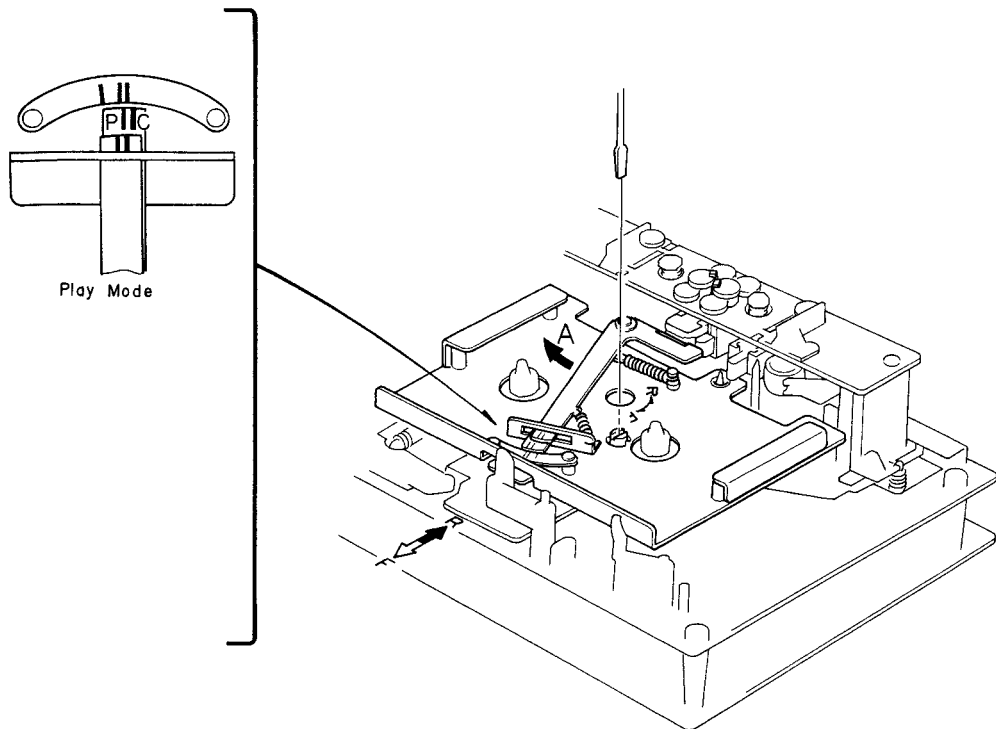


Fig. 4.7



#### 4.5. Tape Guides Adjustment and Erase Head Stroke Adjustment

Remove Head Mount Base Ass'y referring to item 2.23. Refer to Figs. 4.8 and 4.9.

##### (1) Supply Tape Guide Height Adjustment

- Load an EH Stroke Check Gauge M-9051 (DA0-9051A) in the N-482Z.
- Set the N-482Z in Play mode.
- Slide the Supply Tape Guide Check Bar down against the supply tape guide, thus check can be made on supply tape guide height.
- If the supply tape guide is misaligned, the Supply Tape Guide Check Bar will not come into the supply tape guide. If such is noted, turn to adjust the height adjustment nut A till the Supply Tape Guide Check Bar is accepted by the supply tape guide.
- If the above are insured, set the N-482Z in Pause mode, then in Play mode to see whether adjustments are appropriately made. If not, (b) through (e) will have to be repeated till satisfactory results are obtained.

##### (2) Take-up Tape Guide Height Adjustment

- Load an EH Stroke Check Gauge M-9051 (DA0-9051A) in the N-482Z.
- Set the N-482Z in Play mode.
- Slide the Take-up Tape Guide Check Bar down against the take-up tape guide, thus check can be made on take-up tape guide height.
- If the take-up tape guide is misaligned, the Take-up Tape Guide Check Bar will not come into the take-up tape guide. If such is noted, turn to adjust the height adjustment nut C till the Take-up Tape Guide Check Bar is accepted by the take-up tape guide.

- If the above are insured, set the N-482Z in Pause mode, then in Play mode to see whether adjustments are appropriately made. If not, (b) through (e) will have to be repeated till satisfactory results are obtained.

##### (3) Erase Head Stroke Adjustment

- Load an EH Stroke Check Gauge M-9051 (DA0-9051A) in the N-482Z.
- Set the N-482Z in Play mode, thus check can be made on erase head stroke through the EH Stroke Indicator.
- Check to insure whether the erase head surface is aligned with red line on the EH Stroke Indicator. If not, adjust the erase head stroke by loosening 2 screws B that assemble erase head and erase head plate.
- After completion of adjustment, 2 pcs. of screws shall be locked with lock tight paint.

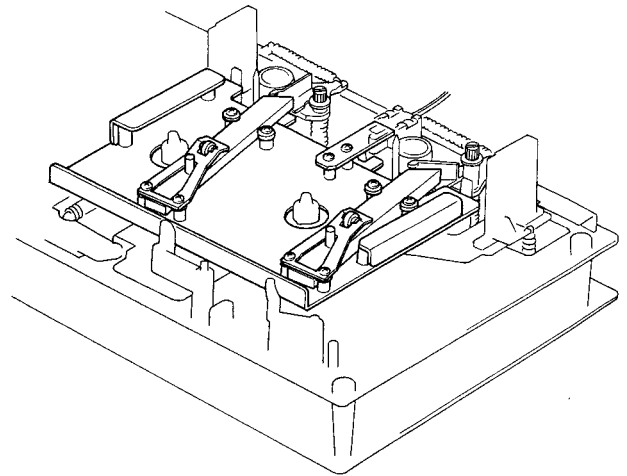


Fig. 4.8

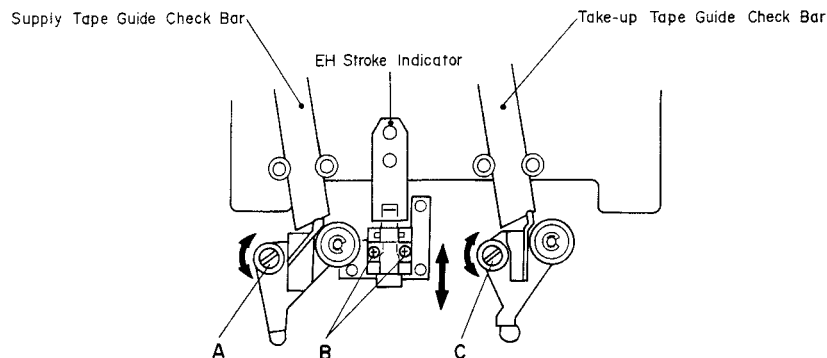


Fig. 4.9

#### 4.6. Erase Head Height and Tilt Adjustment

Refer to Figs. 4.10 and 4.11.

- (1) Remove Head Mount Base Ass'y referring to item 2.23.
- (2) Load an EH Tilt Check Gauge M-9040 (DA09040A) in the N-482Z.
- (3) Set the N-482Z in Stop mode.
- (4) Check to insure whether one of the 3 Beacons is illuminating. Look down the mirror as shown by an arrow mark and slowly turn the Screw "Height" counterclockwise (or clockwise) so that the two horizontal lines on the mirror will become superposed on the line (in different color) of the erase head, and check to insure whether Beacon "1" is illuminating.
- (5) Turn Screw "Tilt" counterclockwise (or clockwise) to light on Beacon "2". Excessive turning will cause the Beacon "1" to light off. Adjustments of Screw "Tilt" will therefore be conducted till both of the Beacons "1" and "2" illuminate.

- (6) Turn Screw "Azimuth" counterclockwise (or clockwise) to light on Beacon "3". Excessive turning will cause either Beacon "1" or "2" to light off, and therefore adjust Screw "Azimuth" until all of the 3 Beacons "1", "2" and "3" illuminate.
- (7) Check to insure whether the horizontal line on the mirror corresponds to that on the erase head. If not, (4) through (7) will have to be repeated till satisfactory results are obtained.
- (8) After completion of adjustment, 3 pcs. of screws shall be locked with lock tight paint.

Note: Before use of this gauge, check to insure freedom from dust or dirt, or overflow in the groove of the erase head surface.

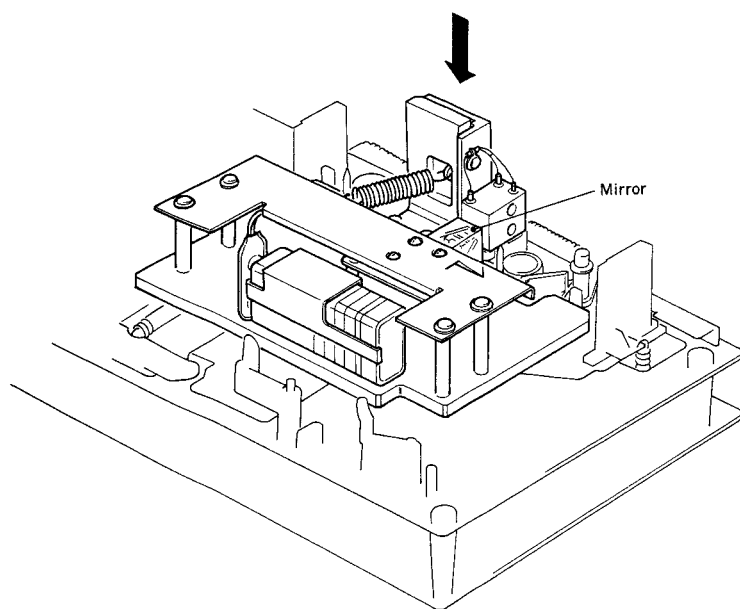


Fig. 4.10

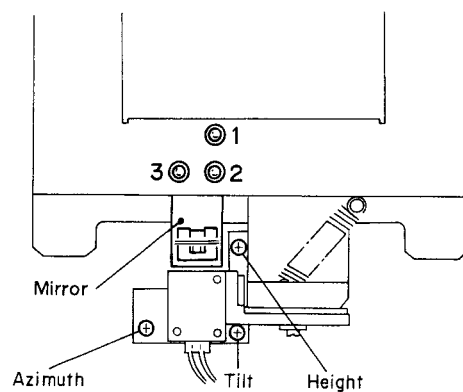


Fig. 4.11

#### 4.7. Back Tension Adjustment

Refer to Figs. 4.12 – 4.14.

- (1) Load a Tension Arm Adjustment Cassette (DA09056A) in the N-482Z referring to Fig. 4.12.
- (2) Set the N-482Z in Play mode.
- (3) Bend the Back Tension Arm with pliers so that the gap between the Cassette Holding Spring assembled on the Head Base Ass'y and the Back Tension Arm becomes 0.5 mm as shown in Fig. 4.13. Do not bend the top of the Back Tension Arm.
- (4) Load the Back Tension Gauge (DA09055A) in the N-482Z.
- (5) Set the N-482Z in Play mode and read the torque value of Back Tension Gauge.

If the value is in a range of 6 g-cm to 10 g-cm, adjustment is not necessary. If not, change the installation point of the Back Tension Spring as shown in Fig. 4.14, and obtain the torque of 7 g-cm to 9 g-cm range.

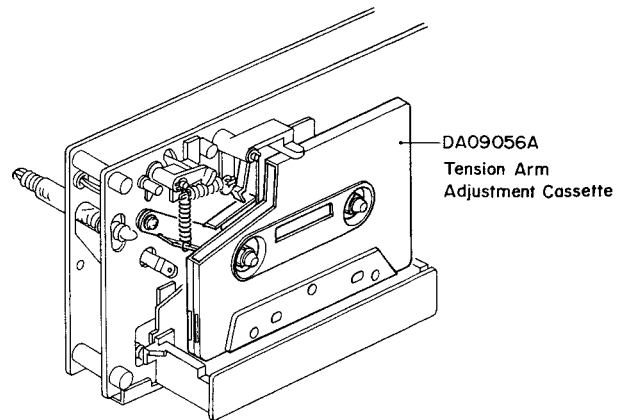


Fig. 4.12

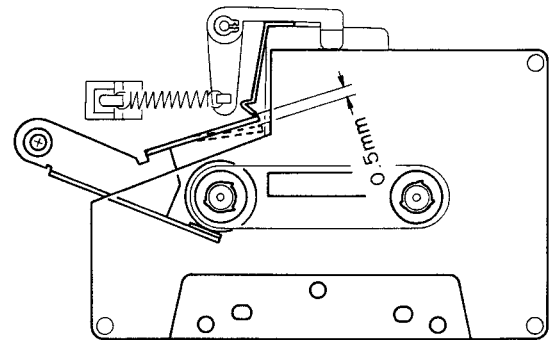


Fig. 4.13

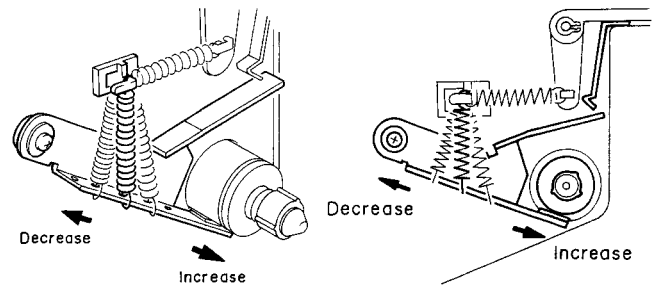


Fig. 4.14

#### 4.8. Playback Head and Record Head Height Adjustment and Azimuth Alignment

##### (1) Playback Head Height Adjustment and Azimuth Alignment

Refer to Fig. 4.15.

- Connect a VTVM to the Output Jacks.
- Set the Monitor switch to Tape and Eq. switch to  $70 \mu\text{s}$ .
- Load a 1 kHz Track Alignment Tape (DA09007A), then set the N-482Z in Play mode.
- Turn the PH Height Gear until the outputs of both channels become minimum.
- Load a 15 kHz Azimuth Tape (DA09004A), then set the N-482Z in Play mode.
- Turn the PH Azimuth Alignment Screw until the outputs of both channels become maximum.
- Repeat (c) through (f) one or two times to obtain optimum performance.

##### (2) Record Head Height Adjustment and Azimuth Alignment

Refer to Fig. 4.15.

- Connect a VTVM to the Output Jacks.
- Set the Bias Tune Volume to the center position.
- Set the Monitor switch to Tape, Eq. switch to  $70 \mu\text{s}$ , and Tape Selector switch to SX.
- Load a Reference SX Tape (DA09025A), then set the N-482Z in Record and Play mode.
- Feed in 400 Hz (0 dB), then turn the RH Height Gear until the outputs of both channels become maximum.

- Feed in 15 kHz ( $-20 \text{ dB}$ ), then turn the RH Azimuth Alignment Screw until the outputs of both channels become maximum.
- Repeat (e) and (f) one or two times to obtain optimum performance.
- After completion of above adjustment, feed in 400 Hz (0 dB) and record it to the same portion of both sides A and B of the tape.
- Immerse the recorded tape in a magnetized developing solution. In turn, check to insure that the recording head tracks across the center are separated with a distance of 0.55 to 0.75 mm (typically 0.65 mm) as illustrated in Fig. 4.16.

Note: Liquid for tape magnetized development solution

"MAGNA-SEE, SOUND CRAFT a product of CBS RECORDS a division of Columbia Broadcasting System, Inc., Danbury, Conn. 06810 U.S.A., or equivalent".

After development, clean the tape otherwise pressure rollers and heads will become dirty.

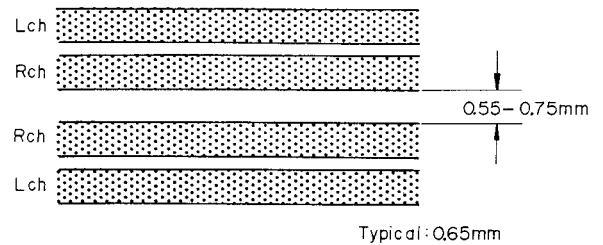


Fig. 4.16

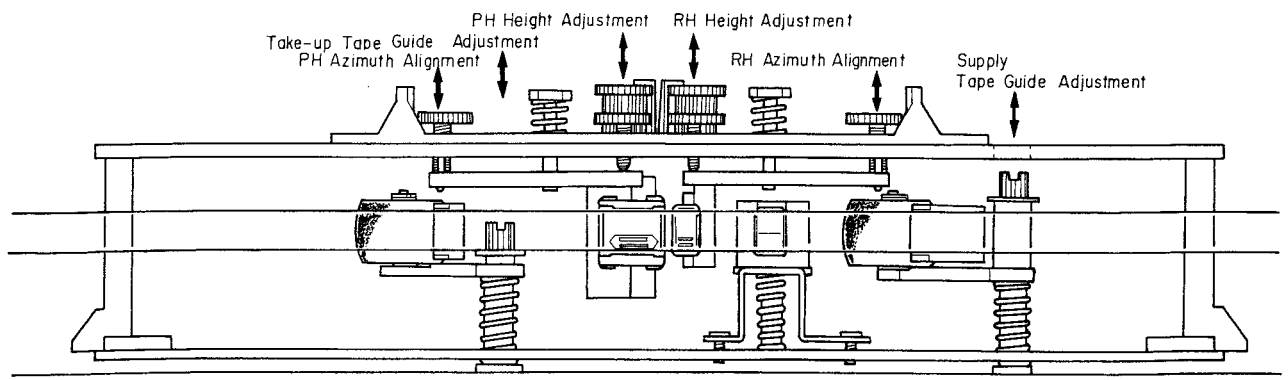


Fig. 4.15

#### 4.9. Record Head Stroke Adjustment

Refer to Figs. 4.17 and 4.18.

Note: This adjustment will be required only to insure freedom from misalignment of the record head stroke in the record head stroke check mode.

- (1) Check the accuracy of the record head stroke.
- (2) Remove Head Mount Base Ass'y referring to item 2.23.
- (3) Remove the record head assembly.
- (4) Adjustment of Record Head Mounting Gauge M-9048 (DA09048A)
  - (a) Mount the Block B onto the Mounting Gauge Plate.
  - (b) Loosen the 2 screws fixing the Block A.
  - (c) As shown in Fig. 4.17, hold the Gauges (3.05 mm and either one of 0.05, 0.15, 0.2, 0.25, 0.3 or 0.35 mm thickness) between the Block A and Block B, and fix the Block A with screws, pushing the Block A to the 2 guide pins.
- (5) Remove the Block B from the Mounting Gauge Plate.
- (6) As shown in Fig. 4.18, mount the R-8L record head assembly onto the Mounting Gauge Plate, then check the location of the R-8L record head surface. (If record head contacts to the Block C, loosen 2 pcs. of screws that assemble record head and record head plate, then place the R-8L record head assembly onto the Plate.)
- (7) Remove the R-8L record head assembly from the Mounting Gauge Plate.
- (8) Readjustment of Record Head Mounting Gauge M-9048 (DA09048A)
  - (a) Mount the Block B onto the Mounting Gauge Plate.
  - (b) Loosen the 2 screws fixing the Block A.
  - (c) As shown in Fig. 4.17, hold the Gauges (3.05 mm and either one of 0.05, 0.15, 0.2, 0.25, 0.3 or 0.35 mm thickness) between the Block A and Block B, and fix the Block A with screws, pushing the Block A to the 2 guide pins.
- (9) Remove the Block B from the Mounting Gauge Plate.
- (10) Mount the R-8L record head assembly onto the Mounting Gauge Plate.
- (11) As shown in Fig. 4.18, loosen 2 pcs. of screws that assemble record head and record head plate. As the location of the Block A is secured by the item (8)-(c), push the record head to the directions A and B, then tighten 2 pcs. of screws.
- (12) Check to insure freedom from gap between the Block C and record head surface, then tighten the 2 pcs. of screws on the record head assembly with lock tight paint.
- (13) Remove the R-8L record head assembly from the Mounting Gauge Plate.
- (14) Assemble the record head assembly to the head mount base assembly.
- (15) Assemble the head mount base assembly to the mechanism assembly.
- (16) Check the record head stroke. If the above are inaccurate, items (1) through (16) will have to be repeated till satisfactory results are obtained.

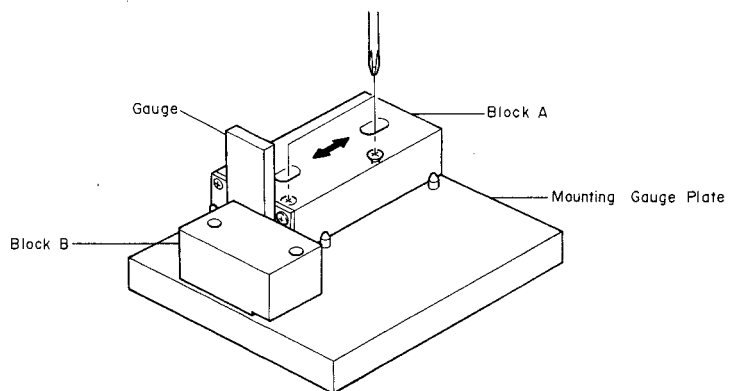
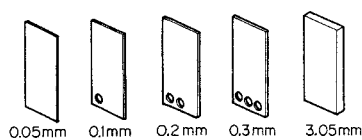


Fig. 4.17

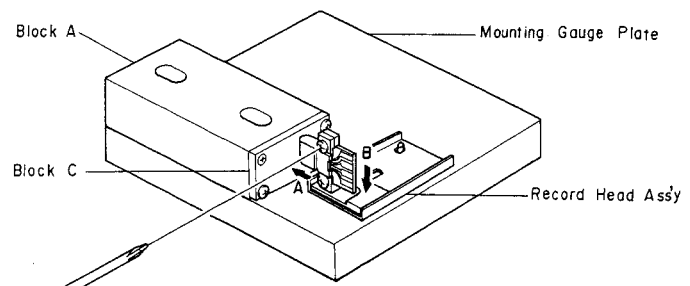


Fig. 4.18

#### 4.10. Tape Travelling Adjustment

The adjustment shall be made with a modified version of the current type EXII C-90 as shown in Fig. 4.19 (error will be made if a previous type Tape Travelling Cassette (DA09011A) should be used for this purpose).

While modifying an EXII C-90, the tape guides in the cassette housing shall be kept protected to avoid tilt. Check shall be made in the following procedures:

- (1) An EXII C-90 tape thus modified shall be loaded onto the N-482Z.
- (2) Release the back-tension (rotate the Supply Reel and feed out some length of tape) and set the N-482Z in Play mode.
- (3) In this juncture, check to insure whether the tape is free from waving or slippage from the tape guide.
- (4) When the modified EXII C-90 is played back, check to insure whether the tape is freedom from waving from head surface or at pressure rollers.
- (5) If either of waving or slippage from the tape guide should be noted, adjustments of "4.3. Record Head and Playback Head Tilt Adjustment", "4.4. Head Base Stroke Adjustment", "4.5. Tape Guides Adjustment and Erase Head Stroke Adjustment", "4.6. Erase Head Height and Tilt Adjustment", "4.7. Back Tension Adjustment", "4.8. Playback Head and Record Head Height Adjustment and Azimuth Alignment", "4.9. Record Head Stroke Adjustment", etc. will be required.

As a case may be, the said waving or slippage may have been caused from defective supply Pressure Roller Ass'y or Take-up Pressure Roller Ass'y without parallel contact with capstans. If such are noted, the Pressure Roller Assemblies will have to be replaced.

Further, excessively weak take-up torque or strong take-up torque may cause defective tape travelling.

The N-482Z is intended to be an adjustment-free Model, however if the similar matters as above should be noted, please replace the Reel Hub Ass'y to obtain appropriate take-up torque.

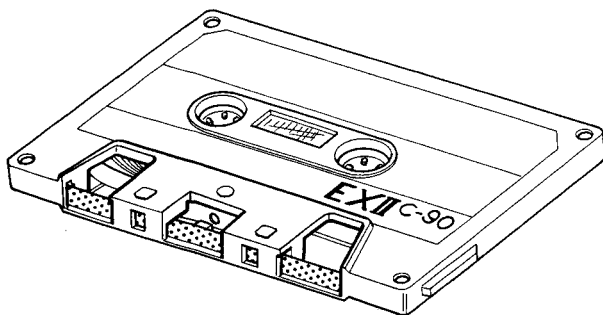


Fig. 4.19

#### 4.11. Flywheel Holder Adjustment

- (1) Refer to Fig. 4.20.

Tighten the Thrust Screws until the gap between the Flywheel Assemblies and Thrust Screws becomes minimized when both of the Capstan Shafts are moved backwardly and forwardly (the Thrust Springs between the Capstan Flanges and Flywheel Thrust Caps are in a flat state).

Excessive tightening of the Thrust Screws however will give damages on the Flywheel Assemblies, to which careful attention is invited.

- (2) Return the Thrust Screws by 1/2 turn.
- (3) Fixing the Thrust Screws with a screwdriver, lock the Lock Nut.
- (4) Apply a quantity of lock tight paint to the Thrust Screws.

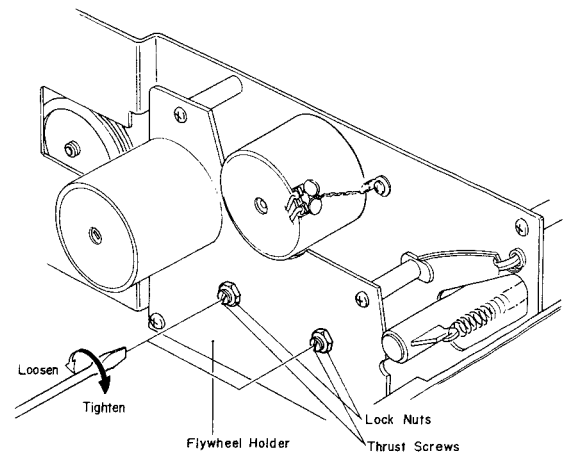


Fig. 4.20

#### 4.12. Eject Wire Adjustment

- (1) Referring to Fig. 4.21, insert a 1.5 mm spacer between the Eject Arm and Eject Stopper by turning the Eject Arm in the illustrated direction, then set the N-482Z in Playback mode.
- (2) With pushing the Eject Arm by hand, loosen the screw and then pull the Eject Wire in the direction of the arrow until it stops as shown in Fig. 4.22.
- (3) Tighten the screw, then apply a quantity of lock tight paint.

#### 4.13. Lubrication

N-482Z is a lubrication-free cassette deck except when parts are replaced. Apply the following lubricant for each replaced part:

(1) LAUNA #100

Capstan Shaft  
Pressure Roller Shaft  
Thrust Cap

(2) FLOIL GB-TS-1

Reel Hub Shaft  
Thrust portion on the Capstan Shaft  
FLOIL GB-TS-1, made by Kanto Chemicals Co., Ltd. in Japan.

We suggest that you use the above or equivalent type. If unavailable please contact Kanto Chemicals Co., Ltd., 2-7 Kanda Suda-cho Chiyoda-ku, Tokyo 101 Japan.

(3) Silicon Oil #3000 CST

Air Damper Piston

Note: Excessive lubrication may cause defective damper action as the  $0.2\phi$  hole at the end of the cylinder may be filled with oil.

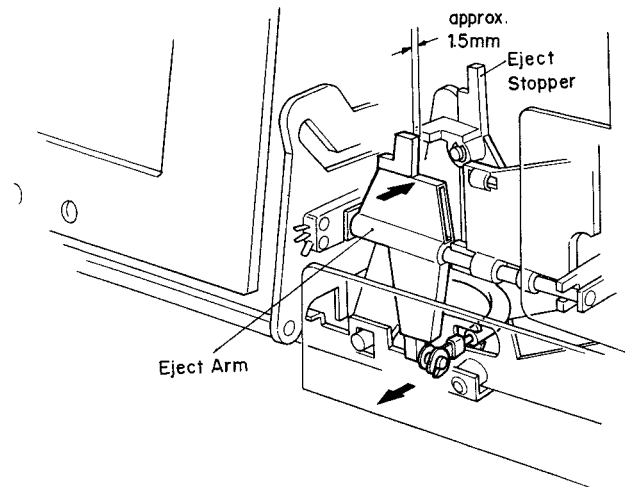


Fig. 4.21

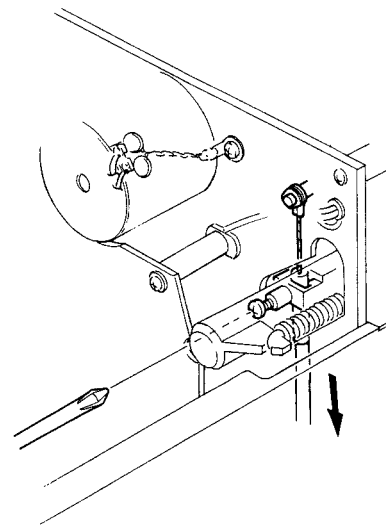


Fig. 4.22

## 5. PARTS LOCATION FOR ELECTRICAL ADJUSTMENT

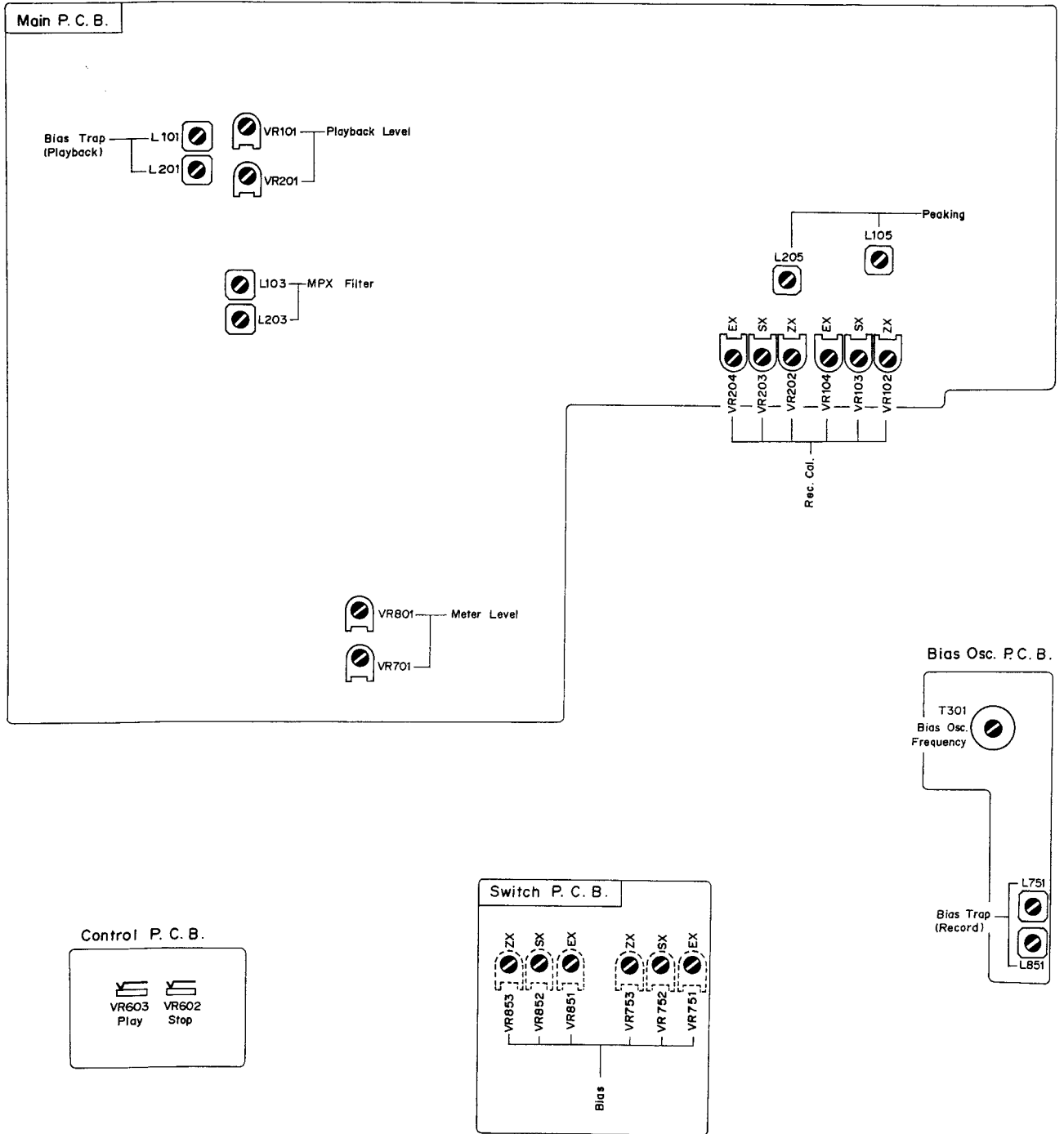


Fig. 5



6. ELECTRICAL ADJUSTMENTS AND MEASUREMENTS

6.1. Adjustment and Measurement Instructions

Note: Electrical adjustment should be performed after mechanical adjustment is completed.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
1	Tape Speed Adjustment	3 kHz Speed and Wow/Flutter Tape (DA09006A)	Frequency Counter to Output Jacks	Playback Monitor SW – Tape Eq. SW – 70 μs	Capstan Motor Governor P.C.B. VR501	Adjust VR501 to obtain 3 kHz ±0.5%. (VR501 is incorporated in the capstan motor.)
2	Meter Level Calibration	400 Hz to Input Jacks	VTVM to TP101, TP201 on the Main P.C.B.	Monitor SW – Source	Main P.C.B. VR701, VR801	1. Feed in 400 Hz, then adjust the Input Level controls to obtain 90 mV –0.4 dB on the VTVM. 2. Adjust VR701 (VR801) so that the 0 dB segment of the level meter starts illuminating. 3. Adjust the Input Level controls to obtain 90 mV on the VTVM, then decrease the generator output level by 20 dB. 4. Check to insure that the segment for –20 dB illuminates.
3	MPX Filter Adjustment	19 kHz ±100 Hz to Input Jacks	VTVM to Output Jacks	Monitor SW – Source MPX SW – OUT/IN	Main P.C.B. L103, L203	1. Adjust Input Level controls to obtain 600 mV on the VTVM. 2. Set the MPX Filter switch to IN, then adjust L103 (L203) to obtain the minimum reading on the VTVM (the minimum reading will be less than –30 dB).
4	Playback Head Track Alignment	1 kHz Track Alignment Tape (DA09007A)	VTVM to Output Jacks	Playback Monitor SW – Tape Tape SW – SX Eq. SW – 70 μs Dolby NR SW – OFF MPX SW – OUT	PH Height Gear	Adjust the PH Height Gear to obtain minimum readings of both channels on the VTVM. Refer to "Playback Head Height Adjustment and Azimuth Alignment" in item 4.8.
5	Playback Head Azimuth Alignment	15 kHz Azimuth Tape (DA09004A)	VTVM to Output Jacks	Same as above	Playback Head Azimuth Alignment Screw	Adjust the Playback Head Azimuth Alignment Screw to obtain the maximum readings of both channels on the VTVM. Refer to "Playback Head Height Adjustment and Azimuth Alignment" in item 4.8. Note: Repeat steps 4 and 5 one or two times to obtain optimum performance.
6	Playback Level Calibration	400 Hz Level Tape (DA09005A)	VTVM to TP101, TP201	Same as above	Main P.C.B. VR101, VR201	Adjust VR101 (VR201) to obtain 90 mV on the VTVM.
7	Playback Frequency Response	400 Hz Level Tape (DA09005A) 10 kHz PB Frequency Tape (DA09003A) 15 kHz PB Frequency Tape (DA09002A) 20 kHz PB Frequency Tape (DA09001A)	VTVM to Output Jacks	Same as above	Main P.C.B. R112, R212	1. Load a 400 Hz level tape and play it back. 2. Load 10 kHz, 15 kHz and 20 kHz PB frequency response tapes and adjust the playback head azimuth to obtain maximum levels on the VTVM with each tape. 3. Read the maximum levels with each tape and check to insure that the levels against the 400 Hz level tape are within the following ranges. If not, obtain satisfactory results by shorting R112 (R212). 10 kHz (–20 dB) –2 dB to +2 dB 15 kHz (–20 dB) –2 dB to +3 dB 20 kHz (–20 dB) –2 dB to +4 dB Check to insure that the difference in level between 10 kHz (–20 dB) and 20 kHz (–20 dB) is less than 2 dB. 4. Conduct step 5 "Playback Head Azimuth Alignment". 5. If above is not sufficient, refer to "Playback Frequency Response Adjustment" in item 6.2.

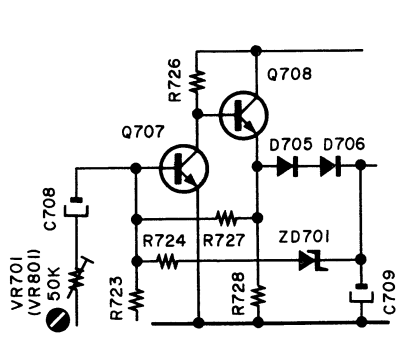


Fig. 6.1  
2. Meter Level

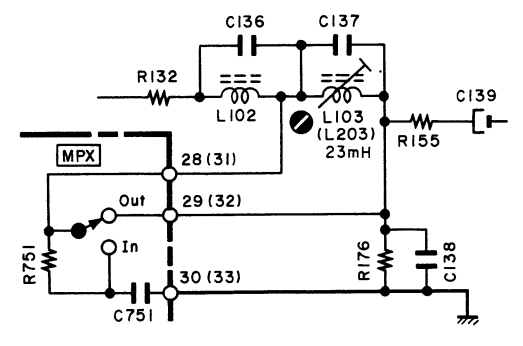


Fig. 6.2  
3. MPX Filter

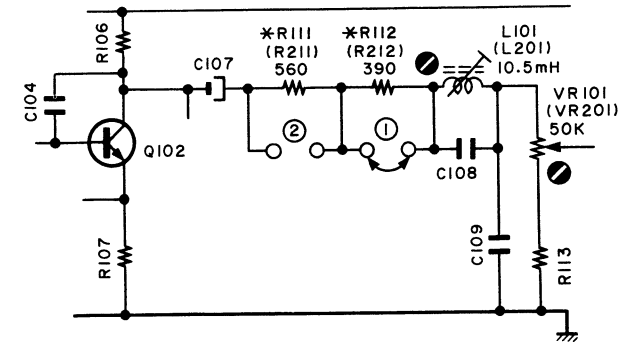


Fig. 6.3  
6. Playback Level  
7. Playback Frequency Response

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
8	Bias Oscillation Frequency and Erase Current Adjustment	External 0.1 Ω Resistor in series to Erase Head	VTVM and Frequency Counter across the 0.1 Ω Resistor	Record, Pause Monitor SW – Source Tape SW – ZX Eq. SW – 70 μs Dolby NR SW – OFF MPX SW – OUT	Bias Oscillator P.C.B. R352, R353	<ol style="list-style-type: none"> <li>1. Set the Bias Tune Volume to center position.</li> <li>2. Adjust T301 to obtain 105 kHz on the frequency counter.</li> <li>3. Check the erase current by the VTVM. Erase current will be in a range of 310 mA to 400 mA (typically approx. 350 mA). If erase current is not sufficient, increase it by shorting R352 or R353.</li> <li>4. After completion of the erase current adjustment, re-check the bias oscillation frequency.</li> </ol>
9	Record Amplifier Equalizer Adjustment	21 kHz (-20 dB) to Input Jacks	VTVM to CN5-1, CN5-3 on Bias Oscillator P.C.B.	Same as above	Main P.C.B. L105, L205	<ol style="list-style-type: none"> <li>1. Remove the bias-cut-jumper from the dip side of the Bias Oscillator P.C.B.</li> <li>2. Adjust L105 (L205) to obtain peak reading at 21 kHz on the VTVM.</li> <li>3. Re-solder the bias-cut-jumper.</li> </ol>
10	Bias Trap Adjustment (Record Amp.)	Remove Input Signals	VTVM to Terminal No. 45, 61 on Bias Oscillator P.C.B.	Same as above	Bias Oscillator P.C.B. L751, L851	<ol style="list-style-type: none"> <li>1. Set the Bias Tune Volume to center position.</li> <li>2. Adjust L751 (L851) to obtain the maximum reading on the VTVM.</li> </ol>
11	Bias Trap Adjustment (Playback Amp.)	Remove Input Signals	VTVM to Output Jacks	Record, Playback Monitor SW – Tape Tape SW – ZX Eq. SW – 70 μs Dolby NR SW – OFF MPX SW – OUT	Main P.C.B. L101, L201	<ol style="list-style-type: none"> <li>1. Set the Bias Tune Volume to center position.</li> <li>2. Adjust L101 (L201) to obtain the minimum reading on the VTVM.</li> </ol>
12	Record Head Height Adjustment	400 Hz (0 dB) to Input Jacks	VTVM to Output Jacks	Record, Playback Monitor SW – Tape Tape SW – SX Eq. SW – 70 μs Dolby NR SW – OFF MPX SW – OUT	RH Height Gear	<ol style="list-style-type: none"> <li>1. Set the Bias Tune Volume to center position.</li> <li>2. Adjust the RH Height Gear to obtain maximum readings of both channels on the VTVM. Refer to "Record Head Height Adjustment and Azimuth Alignment" in item 4.8.</li> </ol>
13	Record Head Azimuth Alignment	15 kHz (-20 dB) to Input Jacks	VTVM to Output Jacks	Same as above	Record Head Azimuth Alignment Screw	<ol style="list-style-type: none"> <li>1. Set the Bias Tune Volume to center position.</li> <li>2. Adjust the Record Head Azimuth Alignment Screw to obtain maximum readings of both channels on the VTVM. Refer to "Record Head Height Adjustment and Azimuth Alignment" in item 4.8.</li> </ol> <p>Note: Repeat steps 12 and 13 one or two times to obtain optimum performance.</p>

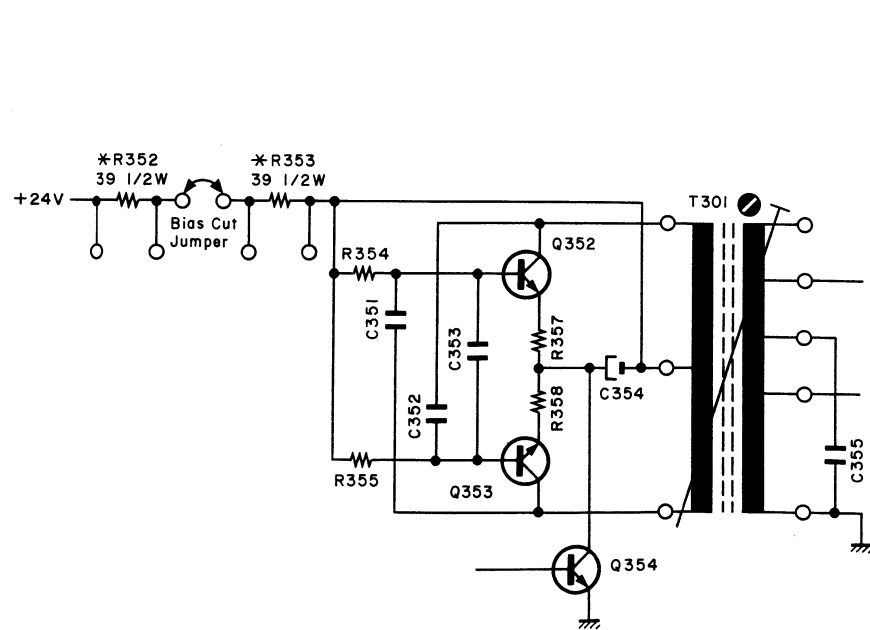


Fig. 6.4  
8. Bias Oscillation Frequency and Erase Current

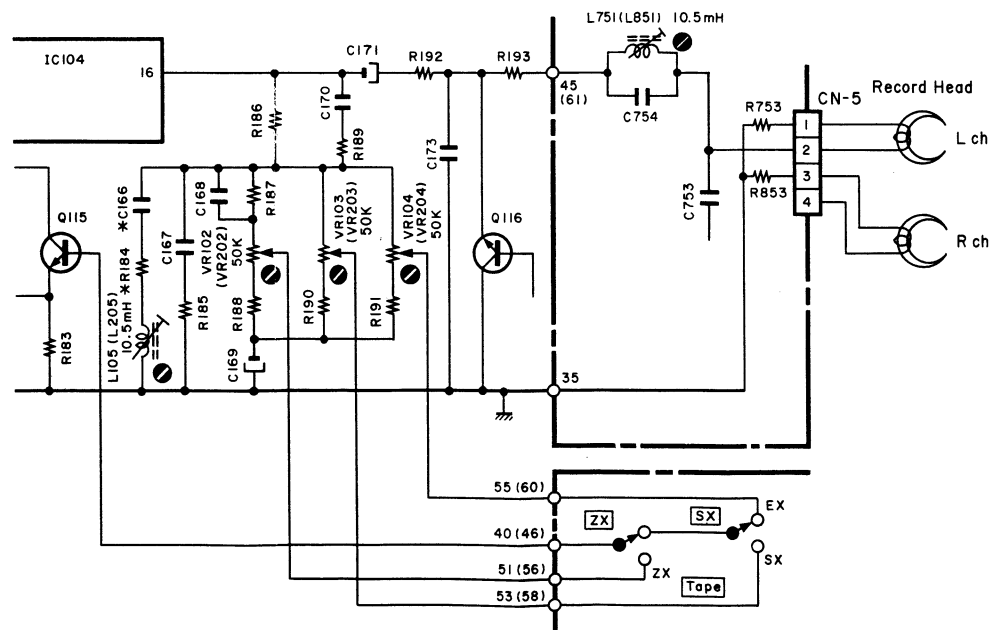


Fig. 6.5  
9. Record Amplifier Equalizer  
10. Bias Trap (Record Amp.)  
14. Record Level  
15. Overall Frequency Response

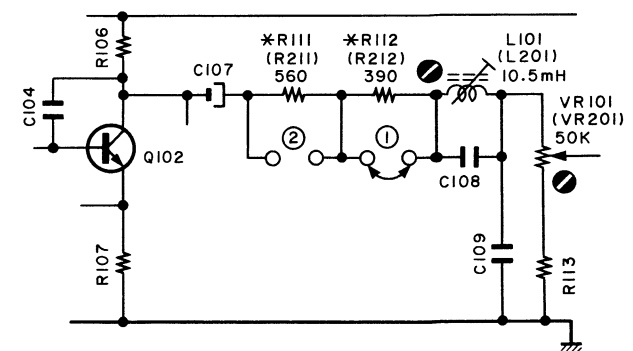


Fig. 6.6  
11. Bias Trap (Playback Amp.)

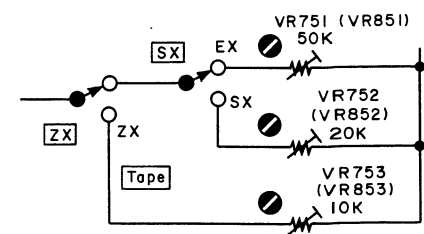


Fig. 6.7  
14. Recording Bias Current

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
14	Record Level Calibration and Recording Bias Current Adjustment	400 Hz (0 dB), 10 kHz and 18 kHz (-20 dB) to Input Jacks	VTVM and Distortion Meter to Output Jacks	Record, Playback Monitor SW - Source/Tape Tape SW - ZX/SX/EX Eq. SW - 70 $\mu$ s (ZX/SX) 120 $\mu$ s (EX) Dolby NR SW - ON, C-Type/ B-Type/OFF MPX SW - OUT	Main P.C.B. (Record Level) ZX: VR102, VR202 SX: VR103, VR203 EX: VR104, VR204  Switch P.C.B. (Bias Current) ZX: VR753, VR853 SX: VR752, VR852 EX: VR751, VR851	Adjustment should be made in the order of ZX, SX and EX. 1. Set the Bias Tune Volume to center position. 2. Set the Monitor switch to Source and Dolby NR switch to C-Type. 3. Feed in 400 Hz, then set the Input Level controls to obtain 0 dB (600 mV) on the VTVM. 4. Set the Monitor switch to Tape. 5. Load a reference ZX tape (DA09037A), reference SX tape (DA09025A) and reference EXII tape (DA09066A). 6. Adjust Record Cal. VR102 (VR202) (for ZX), VR103 (VR203) (for SX) and VR104 (VR204) (for EX) to center position. 7. Feed in 400 Hz (0 dB), then record and play it back. Adjust Bias VR753 (VR853) (for ZX), VR752 (VR852) (for SX) and VR751 (VR851) (for EX) to obtain the maximum readings on the VTVM. 8. Feed in 18 kHz (-20 dB), then adjust Bias VR753 (VR853) (for ZX), VR752 (VR852) (for SX) and VR751 (VR851) (for EX) to obtain the same readings as source monitor levels on the VTVM. 9. Feed in 400 Hz (0 dB), then adjust Record Cal. VR102 (VR202) (for ZX), VR103 (VR203) (for SX) and VR104 (VR204) (for EX) to obtain 0 dB on the VTVM. 10. Repeat above 8 and 9 two or three times to obtain optimum performance. 11. Set the Dolby NR switch to OFF. 12. Feed in 10 kHz (-20 dB) and 18 kHz (-20 dB), then record and play them back. Check to insure that the levels are within -20 dB $\pm$ 3 dB against the levels in Dolby NR C-Type. 13. Set the Dolby NR switch to B-Type. 14. Feed in 10 kHz (-20 dB) and 18 kHz (-20 dB), then record and play them back. Check to insure that the levels are within -20 dB $\pm$ 2 dB against the levels in Dolby NR OFF. 15. Check to insure whether the total harmonic distortion is less than 0.9% for ZX tape and 1.0% for SX and EXII tapes. 16. If above is not sufficient, repeat 7 to 15 till satisfactory results are obtained.
15	Overall Frequency Response Adjustment	400 Hz (0 dB) and 20 Hz to 18 kHz (-20 dB) to Input Jacks	VTVM to Output Jacks	Record, Playback Monitor SW - Source/Tape Tape SW - ZX/SX/EX Eq. SW - 70 $\mu$ s (ZX/SX) 120 $\mu$ s (EX) Dolby NR SW - OFF MPX SW - OUT	Main P.C.B. L105, L205	1. Set the Bias Tune Volume to center position. 2. Set the Monitor switch to Source. 3. Feed in 400 Hz (0 dB) and adjust Input Level controls to obtain 0 dB on the VTVM. 4. Decrease the generator output level by 20 dB. 5. Set the Monitor switch to Tape, then record and play it back. 6. Feed in 20 Hz to 18 kHz (-20 dB), and check to insure if the output levels are within -20 dB $\pm$ 4 dB. 7. If above is not sufficient, adjust L105 (L205) to obtain approx. -20 dB on the VTVM. Then, conduct step 14 "Record Level Calibration and Recording Bias Current Adjustment" 8. If above is not sufficient, precise re-adjustment of step 7 "Playback Frequency Response", replacement of Playback Head or Record Head, or check on item 4.10 "Tape Travelling Adjustment" will be required.
16	Crosstalk Measurement	1 kHz to Input Jacks	1 kHz Band Pass Filter and VTVM to Output Jacks	Record and Playback Monitor SW - Tape Tape SW - ZX Eq. SW - 70 $\mu$ s Dolby NR SW - OFF MPX SW - OUT		1. Set the Bias Tune Volume to center position. 2. Erase the tape with bulk eraser. 3. Adjust the Input Level controls to obtain 0 dB on the VTVM, and record the signals on the reference ZX tape (DA09037A). 4. Turn the cassette tape the other way round and play it back. 5. Measure the difference between 3 and 4.
17	Channel Separation Measurement	1 kHz to Input Jacks	Same as above	Same as above		1. Set the Bias Tune Volume to center position. 2. Erase the tape with bulk eraser. 3. Adjust L ch (R ch) Input Level control to obtain 0 dB on the VTVM, and close R ch (L ch) Input Level control. 4. Record and play it back, then measure the R ch (L ch) level.
18	Erasure Measurement	100 Hz to Input Jacks	100 Hz Band Pass Filter and VTVM to Output Jacks	Record and Playback Monitor SW - Tape Tape SW - ZX Eq. SW - 70 $\mu$ s Dolby NR SW - OFF MPX SW - OUT		1. Set the Bias Tune Volume to center position. 2. Erase the tape with bulk eraser. 3. Adjust Input Level controls to obtain 0 dB on the VTVM, and record the signals on the reference ZX tape (DA09037A). 4. Rewind the tape, close Input Level controls, and then record again. 5. Rewind the tape, play it back, and then measure the difference between 3 and 4.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
19	Signal to Noise Ratio Measurement	400 Hz to Input Jacks	IHF-A Curve Filter, Distortion Meter and VTVM to Output Jacks	Record and Playback Monitor SW – Tape Tape SW – ZX Eq. SW – 70 $\mu$ s Dolby NR SW – ON, B-Type/C-Type MPX SW – OUT		<ol style="list-style-type: none"> <li>1. Set the Bias Tune Volume to center position.</li> <li>2. Set the Dolby NR switch to B-Type/C-Type.</li> <li>3. Feed in 400 Hz, then record and play it back.</li> <li>4. Adjust the Input Level controls to obtain 3% total harmonic distortion in playback mode.</li> <li>5. Close the Input Level controls then record.</li> <li>6. After rewind, play back and check the output level difference between 4 and 5.</li> </ol> <p>Note: The filter of IHF-A curve shall be used in the measurements.</p>
20	Total Harmonic Distortion Measurement	400 Hz to Input Jacks	VTVM and Distortion Meter to Output Jacks	Record and Playback Monitor SW – Tape Tape SW – ZX/SX/EX Eq. SW – 70 $\mu$ s (ZX/SX) 120 $\mu$ s (EX) Dolby NR SW – OFF MPX SW – OUT		<ol style="list-style-type: none"> <li>1. Set the Bias Tune Volume to center position.</li> <li>2. Adjust the Input Level controls to obtain 0 dB on the VTVM.</li> <li>3. Record and play it back.</li> <li>4. Read the distortion meter and check to insure that the distortion is as follows: EXII . . . . . 1.0% or less SX . . . . . 1.0% or less ZX . . . . . 0.9% or less</li> </ol>
21	Wow/Flutter Measurement	3 kHz Speed and Wow/Flutter Tape (DA09006A)	Wow/Flutter Meter to Output Jacks	Playback Monitor SW – Tape Eq. SW – 70 $\mu$ s		Play back and read the wow/flutter meter.

**6.2. Playback Frequency Response Adjustment**

Fig. 6.8 shows a playback equalization curve and Fig. 6.9 is the playback amp. circuit for adjustment.

**(1) Level Adjustment (for middle frequency response)**

This adjustment will be required if playback level is not sufficient when 10 kHz PB frequency response tape is played back as referred to step 7 in 6.1 "Adjustment and Measurement Instructions".

Playback equalization level is varied by the modification of R108 (R208) and R109 (R209) on the Main P.C.B.

Following are the details for level modifications:

- Approx. +1 dB . . . . . R108 (R208): 3.0K  
R109 (R209): 4.3K
- 0 dB . . . . . R108 (R208): 2.7K  
R109 (R209): 3.9K
- Approx. -1 dB . . . . . R108 (R208): 2.4K  
R109 (R209): 3.6K

**(2) Peaking Adjustment (for high frequency response)**

This adjustment will be required if playback level is not sufficient when 20 kHz PB frequency response tape is played back as referred to step 7 in 6.1 "Adjustment and Measurement Instructions".

Peaking portion compensates the gap loss of the playback head. Peaking level is varied by the short circuit of R112 (R212) or R111 (R211) as illustrated in Fig. 6.8.

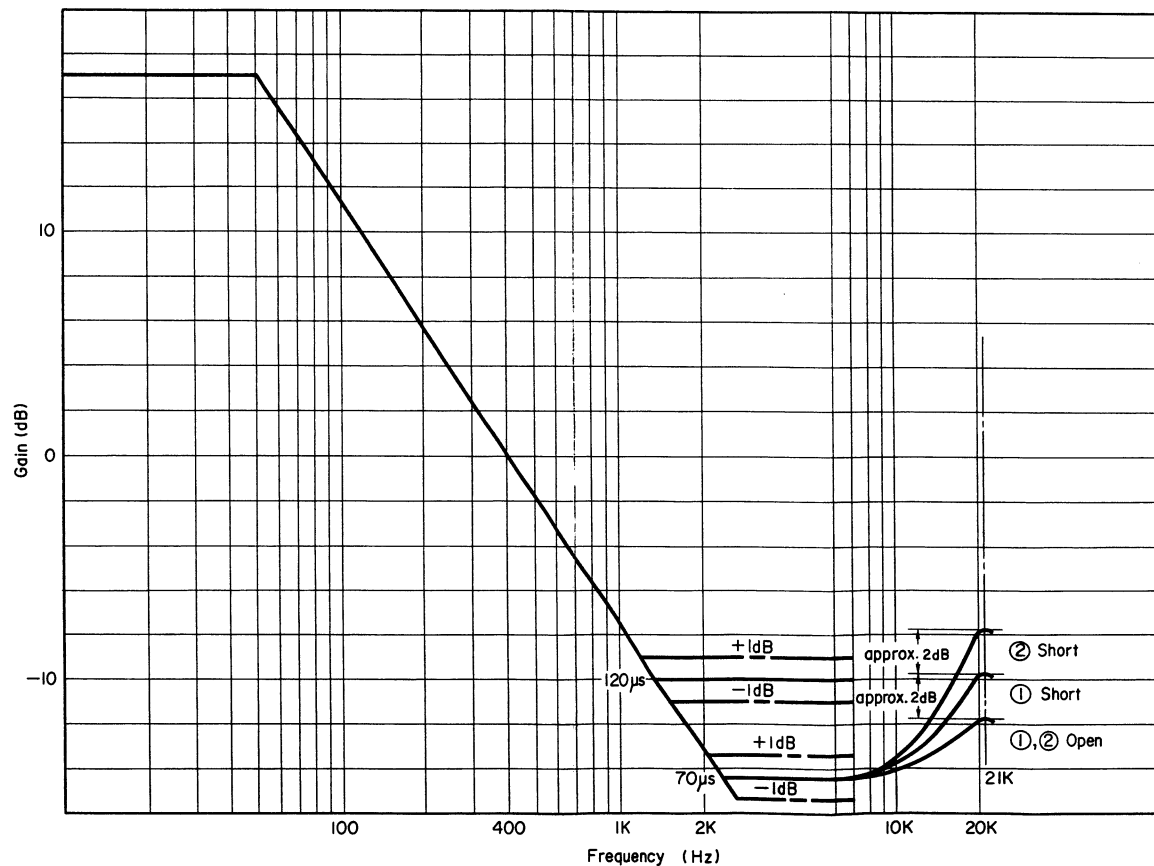


Fig. 6.8 Playback Equalization Curve

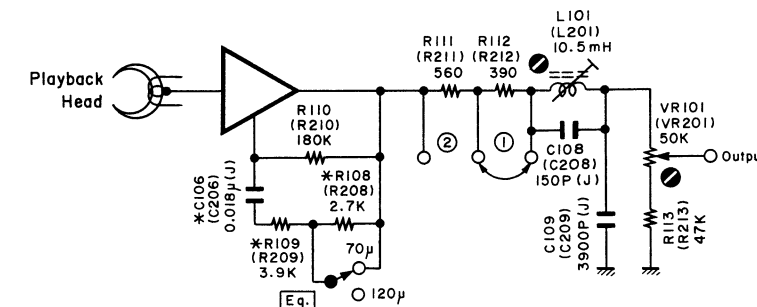


Fig. 6.9 Playback Amp.

**6.3. Dolby NR Circuit Check**

Dolby NR circuit incorporates a Dolby NR IC ( $\mu$ A7300-PC) which has no adjustment point.

Perform the following checks and make sure that the IC operates accurately, i.e., accuracy of frequency response through IC.

**6.3.1. Dolby NR B-Type Circuit Check**

**(1) Playback Dolby NR Circuit**

Signal Source: 1.4 kHz to negative side of C125 (C225) on Main P.C.B. (positive side is connected to IC102-9 (IC202-9)).

Output Connection: VTVM to test point TP101 (TP201) on Main P.C.B.

Mode: Stop  
Monitor SW – Tape  
Dolby NR SW – ON, B-Type/  
OFF

- (a) Connect a VTVM to TP101 (TP201) on the Main P.C.B.
- (b) Set the Dolby NR switch to B-Type. Feed in 1.4 kHz and adjust the generator output control to obtain 9 mV on the VTVM.
- (c) Set the Dolby NR switch to OFF. Check to insure that the reading is +3.2 dB  $\pm$ 1.5 dB on the VTVM.

**(2) Record Dolby NR Circuit**

Signal Source: 1.4 kHz to Input Jacks  
Output Connection: VTVM to test point TP101 (TP201) and IC104-14 (IC204-14) on Main P.C.B.

Mode: Stop  
Monitor SW – Source  
Dolby NR SW – ON, B-Type/  
OFF

- (a) Connect a VTVM to TP101 (TP201) on the Main P.C.B.
- (b) Feed in 1.4 kHz and adjust the Input level controls to obtain 9 mV/2.85 mV on the VTVM.
- (c) Remove the VTVM from TP101 (TP201) and re-connect it to IC104-14 (IC204-14).
- (d) Check to insure that the reading at IC104-14 (IC204-14) corresponds to the following with Dolby NR switch OFF and B-Type.

Input Level at TP101 (TP201)	Level at IC104-14 (IC204-14)	
	Dolby NR OFF	Dolby NR B-Type
10 mV	0 dB	+3.2 dB $\pm$ 1.5 dB
3.16 mV	0 dB	+8.2 dB $\pm$ 1.5 dB

**6.3.2. Dolby NR C-Type Circuit Check**

**(1) Playback Dolby NR Circuit**

Signal Source: 1.4 kHz to negative side of C125 (C225) on Main P.C.B. (positive side is connected to IC102-9 (IC202-9)).

Output Connection: VTVM to test point TP101 (TP201) on Main P.C.B.

Mode: Stop  
Monitor SW – Tape  
Dolby NR SW – ON, C-Type/  
OFF

- (a) Connect a VTVM to TP101 (TP201) on the Main P.C.B.
- (b) Set the Dolby NR switch to C-Type. Feed in 1.4 kHz and adjust the generator output control to obtain 9 mV on the VTVM.
- (c) Set the Dolby NR switch to OFF. Check to insure that the reading is +6.5 dB  $\pm$ 1.5 dB on the VTVM.

**(2) Record Dolby NR Circuit**

Signal Source: 1.4 kHz to Input Jacks  
Output Connection: VTVM to test point TP101 (TP201) and IC104-14 (IC204-14) on Main P.C.B.

Mode: Stop  
Monitor SW – Source  
Dolby NR SW – ON, C-Type/  
OFF

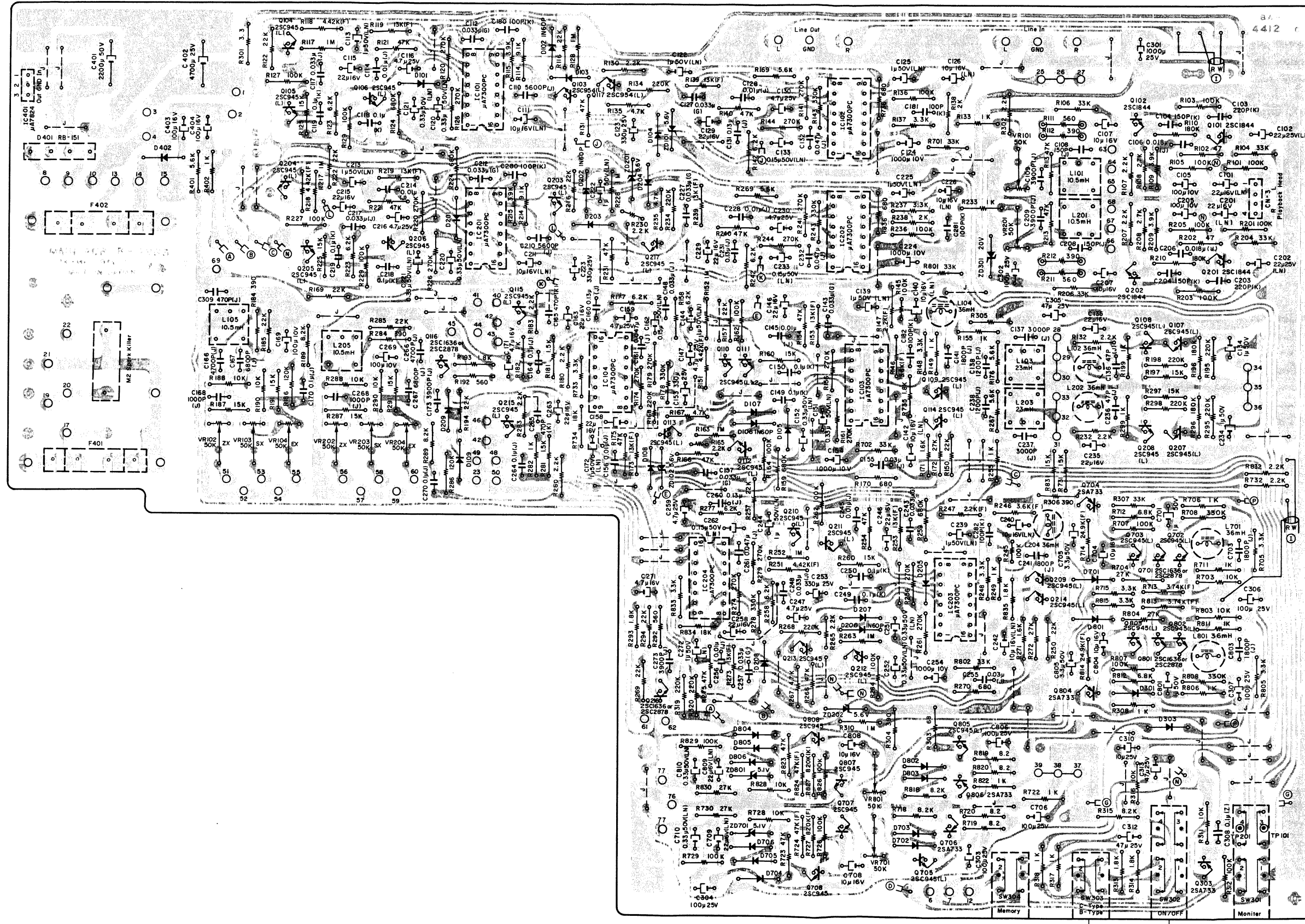
- (a) Connect a VTVM to TP101 (TP201) on the Main P.C.B.
- (b) Feed in 1.4 kHz and adjust the Input level controls to obtain 9 mV/2.85 mV on the VTVM.
- (c) Remove the VTVM from TP101 (TP201) and re-connect it to IC104-14 (IC204-14).
- (d) Check to insure that the reading at IC104-14 (IC204-14) corresponds to the following with Dolby NR switch OFF and C-Type.

Input Level at TP101 (TP201)	Level at IC104-14 (IC204-14)	
	Dolby NR OFF	Dolby NR C-Type
10 mV	0 dB	+6.5 dB $\pm$ 1.5 dB
3.16 mV	0 dB	+11.4 dB $\pm$ 1.5 dB

7. MOUNTING DIAGRAMS AND PARTS LIST

Note: Mounting diagram shows a dip side view of the printed circuit board.

7.1. Main P.C.B. Ass'y



Note: Diode is 1S53 unless otherwise specified.

Fig. 7.1.1 Serial No.: A12001121 -



Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
esistor 680K ERD-25T J	C115,129 146,158 215,229	OB01862A	Electrolytic Capacitor 22µ 16V	C103,203 C104,204 C105,205	OB09283A OB09281A OB05885A	Ceramic Capacitor 220P 50V K Ceramic Capacitor 150P 50V K Electrolytic Capacitor 100µ 10V	701,801 L103,203 R132,232	OB03563A OB05622A	19 kHz Coil 23mH Carbon Resistor 2.2K ERD-25T J	C708,808 C709,809 C710,810	OB01412A OB09137A OB09385A	Electrolytic Capacitor 10µ 16V Electrolytic Capacitor 22µ 16V (LN) Electrolytic Capacitor 0.33µ 50V (LN)
esistor 15K ERD-25T J	246,258 C116,130	OB01402A	Electrolytic Capacitor 4.7µ 25V	C106,206 C107,207 C108,208	OB05832A OB01412A OB09246A	Mylar Capacitor 0.018µ 50V J Electrolytic Capacitor 10µ 16V Mica Capacitor 150P 50V J	732,832 R176,276 R195,198	OB01887A OB05625A	Carbon Resistor 5.6K ERD-25T J Carbon Resistor 220K ERD-25T J			
esistor 100K ERD-25T J	147,159 216,230 247,259			C109,209 C302	OB01804A OB01272A	Mylar Capacitor 3900P 50V J Electrolytic Capacitor 100µ 25V	295,298 R196,296 R197,297 731,831					
	C117,148 217,248 C118,119	OB05583A	Mylar Capacitor 0.033µ 50V J									
	149,150 218,219 249,250	OB01603A	Mylar Capacitor 0.1µ 50V K									
esistor 2.2K ERD-25T J	C120,121	OB09385A	Electrolytic Capacitor 0.33µ 50V (LN)	Q115,215 Q116,216	OB01872A OB06070A	Transistor 2SC945 (L) Transistor 2SC1636	305,308 706,711					
esistor 1K ERD-25T J	151,152 220,221 251,252			(OB06299A) D109,209 L105,205	OB06181A OB00068A	Silicon Diode 1SS53 Trap Coil 10.5mH	722,806 811,822					
esistor 220K ERD-25T J	C123,153 223,253 C124,154	OB05793A	Electrolytic Capacitor 330µ 25V	VR102,103 104,202 203,204	OB07237A	Semi-fixed Volume 50K	R303 R306 R307	OB09306A OB09383A OB05509A	Fail Safe Type Resistor 68 RDF-25S J Fail Safe Type Resistor 390 RDF-25S J Carbon Resistor 33K ERD-25T J			
esistor 4.7K ERD-25T J	224,254 C131,160	OB05852A	Electrolytic Capacitor 1000µ 10V	R169,185 194,269 285,294	OB05615A	Carbon Resistor 22K ERD-25T J	R703,803 R704,804 R705,715	OB01888A OB05743A OB01681A	Carbon Resistor 10K ERD-25T J Carbon Resistor 27K ERD-25T J Carbon Resistor 3.3K ERD-25T J			
esistor 3.3K ERD-25T J	231,260 C132,161	OB09566A	Mylar Capacitor 0.13µ 50V J	R180,183 280,283 R181,281	OB05622A	Carbon Resistor 2.2K ERD-25T J	R707,807 R708,808 R712,812	OB01889A OB05627A OB01682A	Carbon Resistor 100K ERD-25T J Carbon Resistor 330K ERD-25T J Carbon Resistor 6.8K ERD-25T J			
esistor 2K ERD-25T J	232,261 C133,162	OB05796A	Mylar Capacitor 0.047µ 50V J	R182,282 R184,284 R186,286	OB05698A OB01857A OB05691A	Carbon Resistor 1.5K ERD-25T J Carbon Resistor 1K ERD-25T J Carbon Resistor 390 ERD-25T J	R713,813 R714,814 R718,818	OB09573A OB09587A OB01856A	Metal Film Resistor 3.74K SN14K2E F Metal Film Resistor 24.9K SN14K2E F Carbon Resistor 8.2K ERD-25T J			
esistor 330K ERD-25T J	233,262 C141,241	OB09570A	Electrolytic Capacitor 0.15µ 50V (LN)	R187,191 287,291 R188,190	OB01683A OB01888A	Carbon Resistor 15K ERD-25T J Carbon Resistor 10K ERD-25T J	R719,720 819,820 C134,234	OB09331A OB01405A	Fail Safe Type Resistor 8.2RDF-25S J Electrolytic Capacitor 1µ 50V			
n Resistor 3.6K SN14K2E F	C155,255	OB09590A	PP Capacitor 1800P 100V J	288,290 R189,289 R192,292	OB01856A OB05575A	Carbon Resistor 8.2K ERD-25T J Carbon Resistor 560 ERD-25T J	C135,235 C136,236	OB01862A OB09242A	Electrolytic Capacitor 22µ 16V Mica Capacitor 47P 50V J			
n Resistor 2.2K SN14K2E F	C180,181	OB09594A	Mylar Capacitor 0.03µ 50V J	R193,293 C163,263	OB05530A OB05614A	Mylar Capacitor 6800P 50V J Carbon Resistor 1.8K ERD-25T J	C137,237 C138,238	OB09590A OB01412A	PP Capacitor 1800P 100V J Electrolytic Capacitor 10µ 16V			
esistor 5.6K ERD-25T J	182,280 281,282	OB09282A	Ceramic Capacitor 100P 50V K	C164,170 264,270 C165,265	OB01780A OB09286A	Mylar Capacitor 0.1µ 50V J Ceramic Capacitor 470P 50V K	C303,306 307,706 806	OB05687A OB01272A	Mylar Capacitor 1200P 50V J Electrolytic Capacitor 100µ 25V			
esistor 1.6K ERD-25T J	C308	OB09292A	Ceramic Capacitor 0.1µ 50V Z	C166,266 C167,267 C168,268	OB05652A OB05530A OB05550A	Mylar Capacitor 4700P 50V J Mylar Capacitor 6800P 50V J Mylar Capacitor 1000P 50V J	C305 C703,803 C704,804	OB01409A OB09590A OB01412A	Electrolytic Capacitor 47µ 25V PP Capacitor 1800P 100V J Electrolytic Capacitor 10µ 16V			
esistor 27K ERD-25T J	C312,313	OB01674A	Electrolytic Capacitor 10µ 25V	C169,269 C171,271 C173,273	OB05885A OB01389A OB01804A	Electrolytic Capacitor 100µ 10V Electrolytic Capacitor 4.7µ 16V Mylar Capacitor 3900P 50V J	C705,805	OB01863A	Electrolytic Capacitor 3.3µ 50V			
esistor 10K ERD-25T J		OB08714A	IC Socket 16P (8 pcs.)									
esistor 1.8K ERD-25T J												
esistor 8.2K ERD-25T J	Q101,102	OB06119A	Transistor 2SC1844 (P)									
esistor 33K ERD-25T J	201,202 ZD301	OB06239A	Zener Diode 20V RD20EBB2									
esistor 18K ERD-25T J	L101,201	OB00068A	Trap Coil 10.5mH									
capacitor 5600P 50V J	VR101,201	OB07237A	Semi-fixed Volume 50K									
tic Capacitor 10µ 16V (LN)	R101,103 201,203 R102,202	OB01889A	Carbon Resistor 100K ERD-25T J									
itor 0.033µ 100V G	R104,106 204,206 R105,205	OB01706A OB05509A	Carbon Resistor 47 ERD-25T J Carbon Resistor 33K ERD-25T J	Q107,108 207,208 702,703	OB01872A	Transistor 2SC945 (L)	Q707,708 807,808 ZD701,801	OB06100A OB06058A	Transistor 2SC945 (A) Zener Diode 5.1V YZ051			
tic Capacitor 1µ 50V (LN)	R107,207 302 R108,208	OB05622A	Carbon Resistor 2.2K ERD-25T J	705,802 803,805 Q701,801			D704,705 706,804 805,806	OB06181A	Silicon Diode 1SS53			
	R109,209 R110,210 R111,211	OB05629A OB05675A OB05640A	Carbon Resistor 2.7K ERD-25T J Carbon Resistor 3.9K ERD-25T J Carbon Resistor 180K ERD-25T J				VR701,801 R304 R723,823	OB07237A OB09383A OB05641A	Semi-fixed Volume 50K Fail Safe Type Resistor 390 RDF-25S J Carbon Resistor 47K ERD-25T J			
itor 0.01µ 100V J	R112,212 R113,213 C101,201 C102,202	OB05641A OB05691A OB05641A OB09137A OB09376A	Carbon Resistor 560 ERD-25T J Carbon Resistor 390 ERD-25T J Carbon Resistor 47K ERD-25T J Electrolytic Capacitor 22µ 16V (LN) Electrolytic Capacitor 22µ 25V (LN)	804,806 D301,303 701,702 703,801 802,803 L102,202	OB06013A OB06181A	Transistor 2SA733 Silicon Diode 1SS53	R724,824 R726,729 826,829 R727,827 R728,828 R730,830 C304	OB09451A OB01889A OB09197A OB01888A OB05743A OB01272A	Metal Film Resistor 47K SN14K2E F Carbon Resistor 100K ERD-25T J Metal Film Resistor 820K SN14K2E F Carbon Resistor 10K ERD-25T J Carbon Resistor 27K ERD-25T J Electrolytic Capacitor 100µ 25V			

**— Power Supply —**

IC401	OB06237A	Regulator IC µA7824
D401	OB06183A	Diode Bridge RB151
D402	OB06181A	Silicon Diode 1SS53
R301	OB09339A	Fail Safe Type Resistor 3.3RDF-25S J
R401	OB01887A	Carbon Resistor 5.6K ERD-25T J
R402	OB01857A	Carbon Resistor 1K ERD-25T J
C301	OB01870A	Electrolytic Capacitor 1000µ 25V
C309	OB09286A	Ceramic Capacitor 470P 50V K
C401	OB09336A	Electrolytic Capacitor 2200µ 50V
C402	OB09250A	Electrolytic Capacitor 4700µ 25V
C403,404	OB01400A	Electrolytic Capacitor 100µ 16V

**— Miscellaneous —**

F401,402	OB07963C OB08374A	Main P.C.B. Fuse 1A 250V (U.S.A., Canada & Others)
F401,402	OB08686A	Fuse 1A 250V (Japan)
F401	OB08275A	Fuse T125mA 250V (220V Class 2, UK & Australia)
F402	OB08457A	Fuse T500mA 250V (220V Class 2, UK & Australia)
M2	OB08342A	Spark Killer (U.S.A. & Canada)
M2	OB08363A	Spark Killer (Japan)
M2,3	OB08445A	Spark Killer (220V Class 2)
M2	OB08240U	Spark Killer (UK, Australia & Others)
CN3	OB08654A	4P-T Post
	OB07315A	Push Switch (1 pce.)
	OB08675A	Pin Jack (1 pce.)
	OB08676A	Heat Sink (1 pce.)
	OM03782A	Fuse Label 1Ax250V (U.S.A., Canada, Japan & Others)
	OM04082B	Fuse Label T125mA 250V (220V Class 2, UK & Australia)
	OM04096B	Fuse Label T500mA 250V (220V Class 2, UK & Australia)
	OB08349A	Fuse Clip (4 pcs.) (220V Class 2, UK & Australia)
	OE00857A	BT Screw M3x6 Philips Binding Head (2 pcs.)
	OE00612A	Screw M3x6 Philips Pan Head (2A) (1 pce.)
	OE00507A	Nut Hex. M3 (1 pce.)



Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA04360A	Main P.C.B. Ass'y (U.S.A. & Canada)	258,277			C116,130	OB01402A	Electrolytic Capacitor 4.7μ 25V	C107,207	OB01412A	Electrolytic Capacitor 10μ 16V	R176,276	OB01682A	Carbon Res
	BA04359A	Main P.C.B. Ass'y (Japan)	R124,159	OB09335A	Carbon Resistor 680K ERD-25T J	147,159			C108,208	OB09246A	Mica Capacitor 150P 50V J	R195,198	OB05625A	Carbon Res
	BA04361A	Main P.C.B. Ass'y (220V Class 2)	224,259			216,230			C109,209	OB01804A	Mylar Capacitor 3900P 50V J	295,298		
	BA04362A	Main P.C.B. Ass'y (UK & Australia)	R125,160	OB01683A	Carbon Resistor 15K ERD-25T J	247,259			C302	OB01272A	Electrolytic Capacitor 100μ 25V	R196,296	OB05640A	Carbon Res
	BA04363A	Main P.C.B. Ass'y (Others)	225,260			C117,148	OB05583A	Mylar Capacitor 0.033μ 50V J				R197,297	OB01683A	Carbon Res
		Serial Nos.: A12001001 - A12001120	R127,129	OB01889A	Carbon Resistor 100K ERD-25T J	217,248						731,831		
			136,145			C118,119	OB01603A	Mylar Capacitor 0.1μ 50V K				R199,299	OB01857A	Carbon Res
			162,164			149,150			Q115,215	OB01872A	Transistor 2SC945 (L)	305,308		
			227,229			218,219			Q116,216	OB06070A	Transistor 2SC1636 (2SC2878)	706,711		
			236,245			249,250				OB06299A		722,806		
			262,264			C120,121	OB09385A	Electrolytic Capacitor 0.33μ 50V (LN)	D109,209	OB06181A	Silicon Diode 1SS53	811,822		
			312			151,152			L105,205	OB00068A	Trap Coil 10.5mH	R303	OB09306A	Fail Safe T <sub>1</sub>
IC101-104	OB06200A	IC μA7300PC (8 pcs.)	R130,165	OB05622A	Carbon Resistor 2.2K ERD-25T J	220,221			VR102,103	OB07237A	Semi-fixed Volume 50K	R306	OB09383A	Fail Safe T <sub>1</sub>
201-204			230,265			251,252			104,202			R307	OB05509A	Carbon Res
Q103-106	OB01872A	Transistor 2SC945 (L) (22 pcs.)	R133,149	OB01857A	Carbon Resistor 1K ERD-25T J	C123,153	OB01272A	Electrolytic Capacitor 100μ 25V	203,204			R703,803	OB01888A	Carbon Res
109-114			155,233			223,253			R169,185	OB05615A	Carbon Resistor 22K ERD-25T J	R704,804	OB05743A	Carbon Res
117			249,255			C124,154	OB05852A	Electrolytic Capacitor 1000μ 10V	194,269			R705,715	OB01681A	Carbon Res
203-206			317,318			224,254			285,294			805,815		
209-214	OB06013A	Transistor 2SA733	R134,168	OB05625A	Carbon Resistor 220K ERD-25T J	C131,160	OB09566A	Mylar Capacitor 0.13μ 50V J	R180,183	OB05622A	Carbon Resistor 2.2K ERD-25T J	R707,807	OB01889A	Carbon Res
217	OB06268A	Zener Diode 5.6V RD5.6EB3	234,268			231,260			280,283			R708,737	OB05627A	Carbon Res
Q303			R135,167	OB01846A	Carbon Resistor 4.7K ERD-25T J	C132,161	OB05796A	Mylar Capacitor 0.047μ 50V J	R181,281	OB05698A	Carbon Resistor 1.5K ERD-25T J	808,837		
ZD101,102	OB01909A	Silicon Diode 1S1555	R137,146	OB01681A	Carbon Resistor 3.3K ERD-25T J	C133,162	OB09570A	Electrolytic Capacitor 0.15μ 50V (LN)	R182,282	OB01857A	Carbon Resistor 1K ERD-25T J	R712,812	OB01682A	Carbon Res
201,202			148,237			233,262			R184,284	OB05691A	Carbon Resistor 390 ERD-25T J	R713,813	OB09573A	Metal Film
D101,103			246,248			C141,241	OB09590A	PP Capacitor 1800P 100V J	R186,286	OB05621A	Carbon Resistor 120K ERD-25T J	R714,814	OB09587A	Metal Film
104,105			733,833			C155,255	OB09045A	Mylar Capacitor 0.027μ 50V J	R187,191	OB01683A	Carbon Resistor 15K ERD-25T J	R718,818	OB01856A	Carbon Res
107,108			R138,147	OB09301A	Carbon Resistor 2K ERD-25T J	C180,181	OB09282A	Ceramic Capacitor 100P 50V K	287,291			R719,720	OB09331A	Fail Safe T <sub>1</sub>
201,203			238,247			182,280			R188,190	OB01888A	Carbon Resistor 10K ERD-25T J	819,820		
204,205			R143,178	OB05627A	Carbon Resistor 330K ERD-25T J	281,282			288,290			C134,234	OB01405A	Electrolytic
207,208			243,278			C308	OB09292A	Ceramic Capacitor 0.1μ 50V Z	R189,289	OB01856A	Carbon Resistor 8.2K ERD-25T J	C135,235	OB01862A	Electrolytic
D102,106	OB00030A	Germanium Diode 1N60P	R170,270	OB05794A	Carbon Resistor 680 ERD-25T J	C310	OB01674A	Electrolytic Capacitor 10μ 25V	R192,292	OB05575A	Carbon Resistor 560 ERD-25T J	C136,236	OB09242A	Mica Capac
202,206			R171,271	OB09565A	Carbon Resistor 1.6K ERD-25T J	C312,313	OB01409A	Electrolytic Capacitor 47μ 25V	R193,293	OB05614A	Carbon Resistor 1.8K ERD-25T J	C137,237	OB09262A	PP Capacit
L104,204	OB03919B	Inductor 36mH	R172,272	OB05743A	Carbon Resistor 27K ERD-25T J		OB08714A	IC Socket 16P (8 pcs.)	C163,263	OB01862A	Electrolytic Capacitor 22μ 16V	C138,238	OB01913A	Mylar Capa
R114,214	OB05694A	Carbon Resistor 9.1K ERD-25T J	R311,316	OB01888A	Carbon Resistor 10K ERD-25T J				C164,170	OB01780A	Mylar Capacitor 0.1μ 50V J	C303,305	OB01272A	Electrolytic
R115,215	OB05675A	Carbon Resistor 3.9K ERD-25T J	R313,314	OB05614A	Carbon Resistor 1.8K ERD-25T J				264,270			306,307		
R116,122	OB05615A	Carbon Resistor 22K ERD-25T J	R315	OB01856A	Carbon Resistor 8.2K ERD-25T J				C165,265	OB09279A	Ceramic Capacitor 22P 50V J	706,806		
150,157			R701,702	OB05509A	Carbon Resistor 33K ERD-25T J				C166,266	OB05652A	Mylar Capacitor 4700P 50V J	C701,801	OB09221A	Electrolytic
216,222			734,801						C167,267	OB05530A	Mylar Capacitor 6800P 50V J	C703,803	OB09409A	PP Capacit
250,257			802,834						C168,268	OB05550A	Mylar Capacitor 1000P 50V J	C704,804	OB01412A	Electrolytic
R117,128	OB05776A	Carbon Resistor 1M ERD-25T J	C110,210	OB05659A	Mylar Capacitor 5600P 50V J	Q101,102	OB06119A	Transistor 2SC1844 (P)	C169,269	OB05885A	Electrolytic Capacitor 100μ 10V	C705,805	OB01863A	Electrolytic
152,163			C111,126	OB09148A	Electrolytic Capacitor 10μ 16V (LN)	201,202			C171,271	OB01389A	Electrolytic Capacitor 4.7μ 16V			
217,228			140,142			ZD301			C173,273	OB01804A	Mylar Capacitor 3900P 50V J			
252,263			211,226			L101,201								
310			240,242			VR101,201								
R118,151	OB09558A	Metal Film Resistor 4.42K SN14K2E F	C112,127	OB09240A	PP Capacitor 0.033μ 100V G	R101,103	OB07237A	Semi-fixed Volume 50K						
218,251			143,157			201,203	OB01889A	Carbon Resistor 100K ERD-25T J						
R119,139	OB09557A	Metal Film Resistor 13K SN14K2E F	212,227			R102,202								
153,173			243,257			R104,106	OB01706A	Carbon Resistor 47 ERD-25T J						
219,239			C113,125	OB09223A	Electrolytic Capacitor 1μ 50V (LN)	204,206	OB05509A	Carbon Resistor 33K ERD-25T J	Q107,108	OB01872A	Transistor 2SC945 (L)	Q707,708	OB06100A	Transistor
253,273			139,144			R105,205			207,208			807,808		
R120,126	OB05620A	Carbon Resistor 270K ERD-25T J	172,213						702,703			ZD701,801	OB06058A	Zener Diode
141,144			225,239						705,802			D704,705	OB06181A	Silicon Dio
156,161			244,272						803,805			706,804		
174,179			C114,128	OB09591A	PP Capacitor 0.01μ 100V J							805,806		
220,226			145,156						Q701,801			VR701,801	OB07237A	Semi-fixed
241,244			214,228									R304	OB09383A	Fail Safe T <sub>1</sub>
256,261			245,256									R723,823	OB05641A	Carbon Res
274,279			146,158									R724,824	OB09451A	Metal Film
R121,131	OB05641A	Carbon Resistor 47K ERD-25T J	215,229									R726,729	OB01889A	Carbon Res
140,154			246,258									826,829		
166,175												R727,827	OB09197A	Metal Film
221,231												R728,828	OB01888A	Carbon Res
240,254												R730,830	OB05743A	Carbon Res
266,275												C304	OB01272A	Electrolytic
R123,142	OB09271A	Carbon Resistor 6.2K ERD-25T J										C708,808	OB01412A	Electrolytic
158,177												C709,809	OB09137A	Electrolytic
223,242												C710,810	OB09385A	Electrolytic



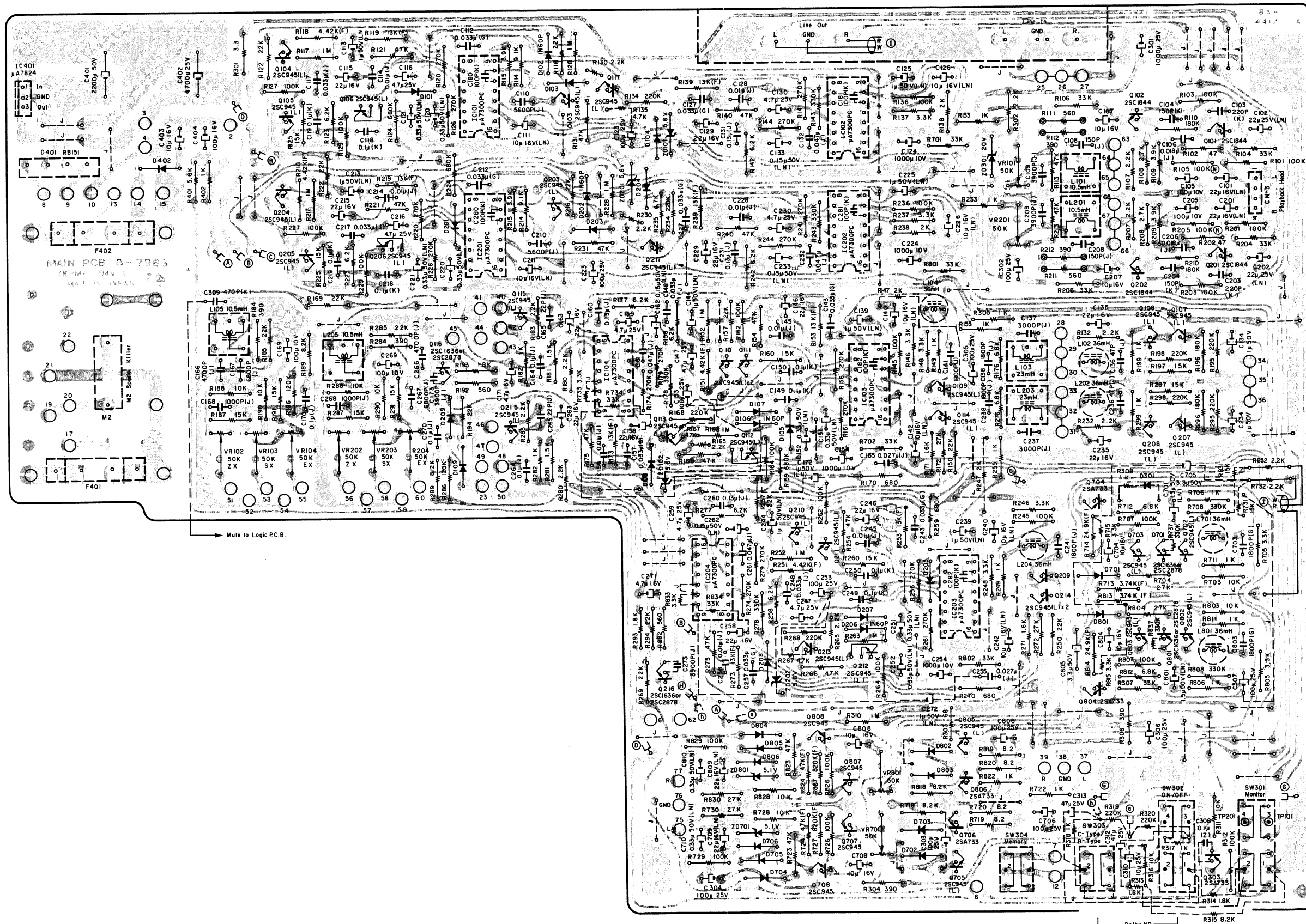


Fig. 7.1.2 Serial Nos.: A12001001 – A12001120

Note: Diode is 1SS53 unless otherwise specified.

7.2. Logic P.C.B. Ass'y

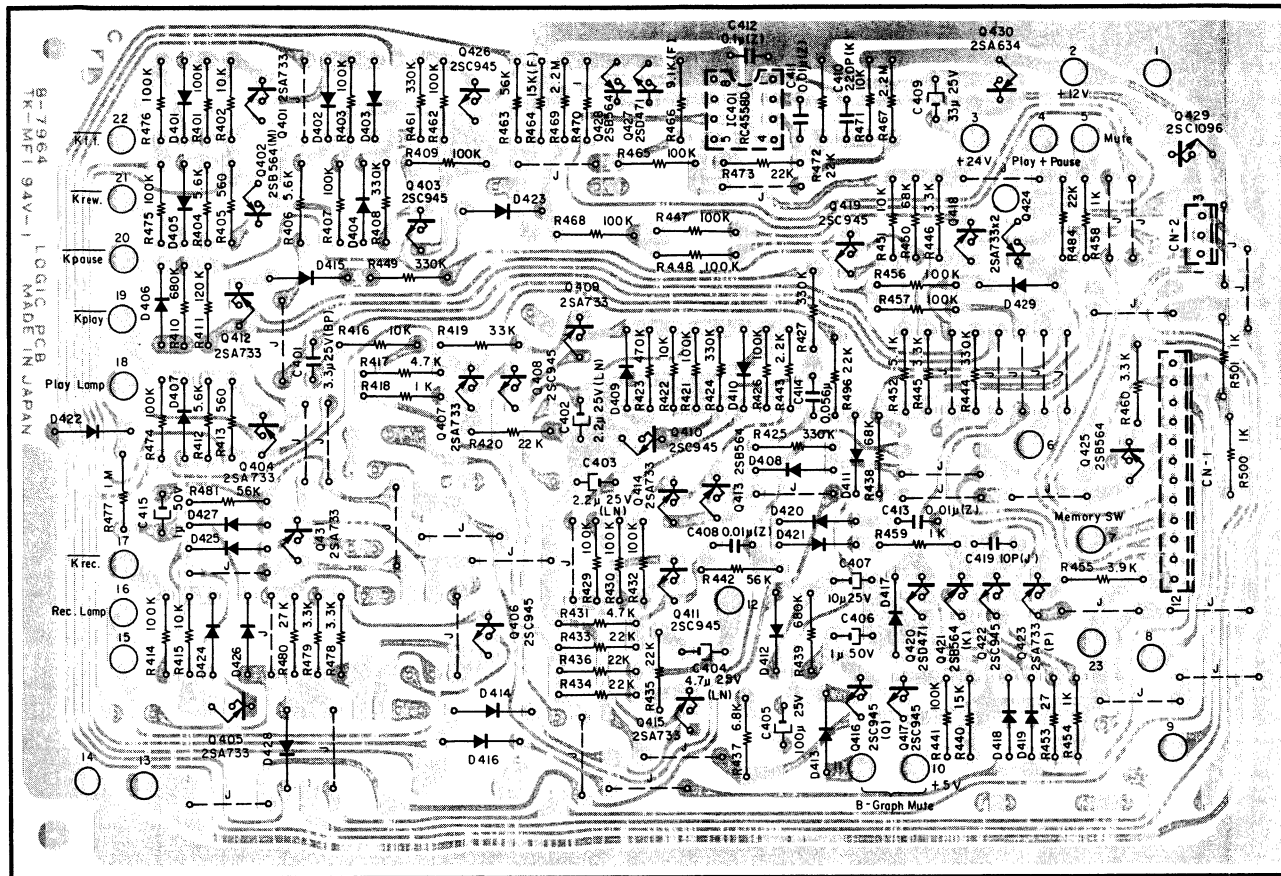


Fig. 7.2.1 Serial No.: A12002626 -

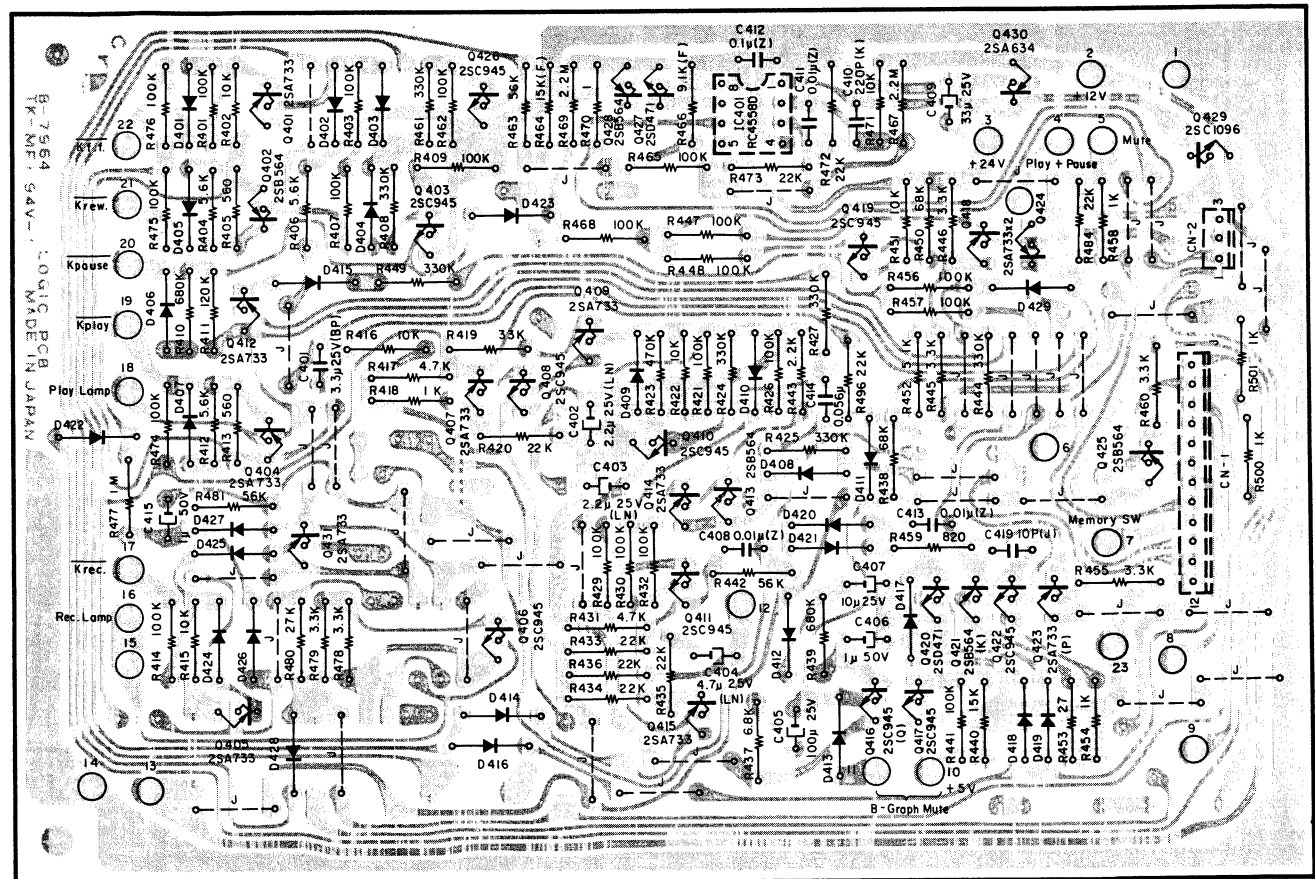


Fig. 7.2.2 Serial Nos.: A12001001 - A12002625

Note: Diode is 1SS53 unless otherwise specified.

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	<b>BA04511A</b>	<b>Logic P.C.B. Ass'y</b> Serial No.: A12002626 -	R442,463 481	OB05508A	Carbon Resistor 56K ERD-25T J		<b>BA04415A</b>	<b>Logic P.C.B. Ass'y</b> Serial Nos.: A12001001 - A12002625	R442,463 481	OB05508A	Carbon Resistor 56K ERD-25T J
			R443	OB05622A	Carbon Resistor 2.2K ERD-25T J				R443	OB05622A	Carbon Resistor 2.2K ERD-25T J
	OB07964C	Logic P.C.B.	R445,446	OB01681A	Carbon Resistor 3.3K ERD-25T J				R445,446	OB01681A	Carbon Resistor 3.3K ERD-25T J
IC401	OB06124B	IC RC4558D	460,478			IC401	OB07964C	Logic P.C.B.	455,460		
Q401,404	OB06013A	Transistor 2SA733	479			Q401,404	OB06124B	IC RC4558D	478,479		
405,407			R452	OB09314A	Carbon Resistor 5.1K ERD-25T J	405,407	OB06013A	Transistor 2SA733			
409,412			R453	OB09384A	Fail Safe Type Resistor 27 RDF-25S J	409,412			R452	OB09314A	Carbon Resistor 5.1K ERD-25T J
414,415			R455	OB05675A	Carbon Resistor 3.9K ERD-25T J	414,415			R453	OB09384A	Fail Safe Type Resistor 27 RDF-25S J
418,424			R464	OB09340A	Metal Film Resistor 15K SN14K2E F	418,424			R459	OB01680A	Carbon Resistor 820 ERD-25T J
431			R466	OB09328A	Metal Film Resistor 9.1K SN14K2E F	431			R464	OB09340A	Metal Film Resistor 15K SN14K2E F
Q402	OB06332A	Transistor 2SB564 (M)	R467,469	OB05671A	Carbon Resistor 2.2M ERD-25T J	Q402,413	OB06069A	Transistor 2SB564	R466	OB09328A	Metal Film Resistor 9.1K SN14K2E F
Q403,406	OB06100A	Transistor 2SC945 (A)	R470	OB09214A	Fail Safe Type Resistor 1 RDF-25S J	425,428			R467,469	OB05671A	Carbon Resistor 2.2M ERD-25T J
408,410			R477	OB05776A	Carbon Resistor 1M ERD-25T J	408,410	OB06100A	Transistor 2SC945 (A)	R470	OB09214A	Fail Safe Type Resistor 1 RDF-25S J
411,417			R480	OB05743A	Carbon Resistor 27K ERD-25T J	Q403,406			R477	OB05776A	Carbon Resistor 1M ERD-25T J
419,422			C401	OB09345A	Electrolytic Capacitor 3.3μ 25V (BP)	411,417			R480	OB05743A	Carbon Resistor 27K ERD-25T J
426			C402,403	OB09332A	Electrolytic Capacitor 2.2μ 25V (LN)	419,422			C401	OB09345A	Electrolytic Capacitor 3.3μ 25V (BP)
Q413,425	OB06069A	Transistor 2SB564	C404	OB09333A	Electrolytic Capacitor 4.7μ 25V (LN)	426			C402,403	OB09332A	Electrolytic Capacitor 2.2μ 25V (LN)
428			C405	OB01272A	Electrolytic Capacitor 100μ 25V	Q416	OB06251A	Transistor 2SC945 (Q)	C404	OB09333A	Electrolytic Capacitor 4.7μ 25V (LN)
Q416	OB06251A	Transistor 2SC945 (Q)	C406,415	OB01405A	Electrolytic Capacitor 1μ 50V	Q420,427	OB06066A	Transistor 2SD471	C405	OB01272A	Electrolytic Capacitor 100μ 25V
Q420,427	OB06066A	Transistor 2SD471	C407	OB01674A	Electrolytic Capacitor 10μ 25V	Q421	OB06252A	Transistor 2SB564 (K)	C406,415	OB01405A	Electrolytic Capacitor 1μ 50V
Q421	OB06252A	Transistor 2SB564 (K)	C408,411	OB09290A	Ceramic Capacitor 0.01μ 50V Z	Q423	OB06155A	Transistor 2SA733 (P)	C407	OB01674A	Electrolytic Capacitor 10μ 25V
Q423	OB06155A	Transistor 2SA733 (P)	413			Q429	OB06020A	Transistor 2SC1096	C408,411	OB09290A	Ceramic Capacitor 0.01μ 50V Z
Q429	OB06020A	Transistor 2SC1096	C409	OB09251A	Electrolytic Capacitor 33μ 25V	Q430	OB06012A	Transistor 2SA634	413		
Q430	OB06012A	Transistor 2SA634	C410	OB09283A	Ceramic Capacitor 220P 50V K	D401-429	OB06181A	Diode 1SS53 (29 pcs.)	C409	OB09251A	Electrolytic Capacitor 33μ 25V
D401-429	OB06181A	Silicon Diode 1SS53 (29 pcs.)	C412	OB09292A	Ceramic Capacitor 0.1μ 50V Z	R401,403	OB01889A	Carbon Resistor 100K ERD-25T J	C410	OB09283A	Ceramic Capacitor 220P 50V K
R401,403	OB01889A	Carbon Resistor 100K ERD-25T J	C414	OB01676A	Mylar Capacitor 0.056μ 50V	407,409			C412	OB09292A	Ceramic Capacitor 0.1μ 50V Z
407,409			C419	OB09277A	Ceramic Capacitor 10P 50V J	414,421			C414	OB01676A	Mylar Capacitor 0.056μ 50V
414,421			CN1	OB08681A	12P-T Post	426,429			C419	OB09277A	Ceramic Capacitor 10P 50V J
426,429			CN2	OB08653A	3P-T Post	430,432			CN1	OB08681A	12P-T Post
430,432				OB08606A	Transistor Mica TO-202 (1 pce.)	441,447			CN2	OB08653A	3P-T Post
441,447				OB08607A	Transistor Bushing TO-202 (1 pce.)	448,456				OB08606A	Transistor Mica TO-202 (1 pce.)
448,456				OE00507A	Nut Hex. M3 (1 pce.)	457,462				OB08607A	Transistor Bushing TO-202 (1 pce.)
457,462				OE00607A	Screw M3x8 Philips Pan Head (3A) (1 pce.)	465,468				OE00507A	Nut Hex. M3 (1 pce.)
465,468				OE00857A	BT Screw M3x6 Philips Binding Head (4 pcs.)	474,475				OE00510A	Screw M3x8 Philips Pan Head (2A) (1 pce.)
474,475						476				OE00857A	BT Screw M3x6 Philips Binding Head (4 pcs.)
476						R402,415	OB01888A	Carbon Resistor 10K ERD-25T J			
R402,415	OB01888A	Carbon Resistor 10K ERD-25T J				416,422					
416,422						451,471					
451,471						R404,406	OB01887A	Carbon Resistor 5.6K ERD-25T J			
R404,406	OB01887A	Carbon Resistor 5.6K ERD-25T J				412					
412						R405,413	OB05575A	Carbon Resistor 560 ERD-25T J			
R405,413	OB05575A	Carbon Resistor 560 ERD-25T J				R408,424	OB05627A	Carbon Resistor 330K ERD-25T J			
R408,424	OB05627A	Carbon Resistor 330K ERD-25T J				425,427					
425,427						444,449					
444,449						461					
461						R410,439	OB09335A	Carbon Resistor 680K ERD-25T J			
R410,439	OB09335A	Carbon Resistor 680K ERD-25T J				R411	OB05621A	Carbon Resistor 120K ERD-25T J			
R411	OB05621A	Carbon Resistor 120K ERD-25T J				R417,431	OB01846A	Carbon Resistor 4.7K ERD-25T J			
R417,431	OB01846A	Carbon Resistor 4.7K ERD-25T J				R418,454	OB01857A	Carbon Resistor 1K ERD-25T J			
R418,454	OB01857A	Carbon Resistor 1K ERD-25T J				458,500					
458,459						501					
500,501						R419	OB05509A	Carbon Resistor 33K ERD-25T J			
R419	OB05509A	Carbon Resistor 33K ERD-25T J				R420,433	OB05615A	Carbon Resistor 22K ERD-25T J			
R420,433	OB05615A	Carbon Resistor 22K ERD-25T J				434,435					
434,435						436,472					
436,472						473,484					
473,484						496					
496						R423	OB01684A	Carbon Resistor 470K ERD-25T J			
R423	OB01684A	Carbon Resistor 470K ERD-25T J				R437	OB01682A	Carbon Resistor 6.8K ERD-25T J			
R437	OB01682A	Carbon Resistor 6.8K ERD-25T J				R438,450	OB05692A	Carbon Resistor 68K ERD-25T J			
R438,450	OB05692A	Carbon Resistor 68K ERD-25T J				R440	OB01683A	Carbon Resistor 15K ERD-25T J			
R440	OB01683A	Carbon Resistor 15K ERD-25T J									

7.3. Volume P.C.B. Ass'y

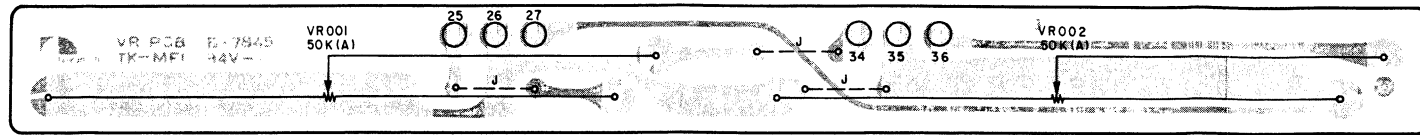


Fig. 7.3

7.4. Lamp P.C.B. Ass'y

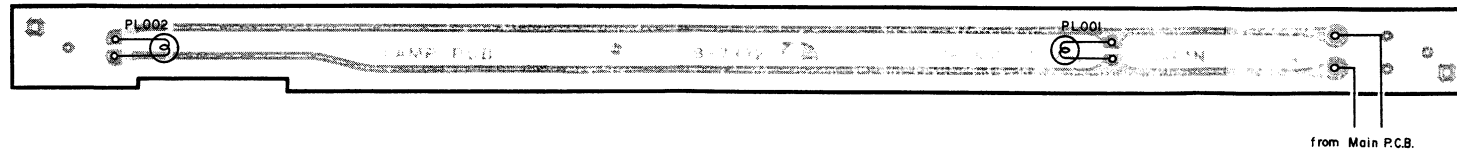


Fig. 7.4

7.5. MPX Filter Switch P.C.B. Ass'y

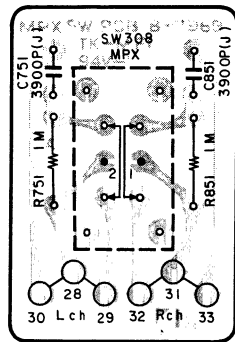


Fig. 7.5

7.6. Headphone Switch P.C.B. Ass'y

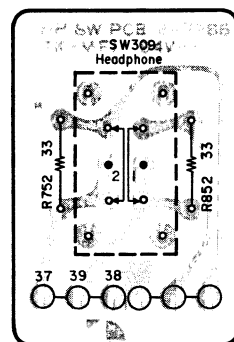


Fig. 7.6

7.7. Bias Tune Volume P.C.B. Ass'y

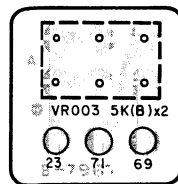


Fig. 7.7

7.8. Indicator P.C.B. Ass'y

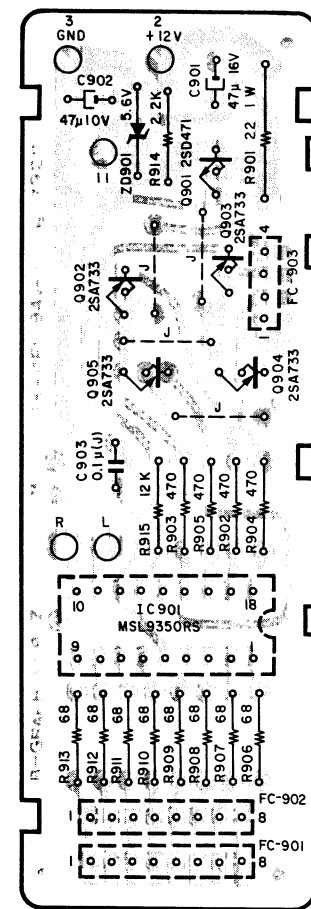


Fig. 7.8

7.9. Switch P.C.B. Ass'y

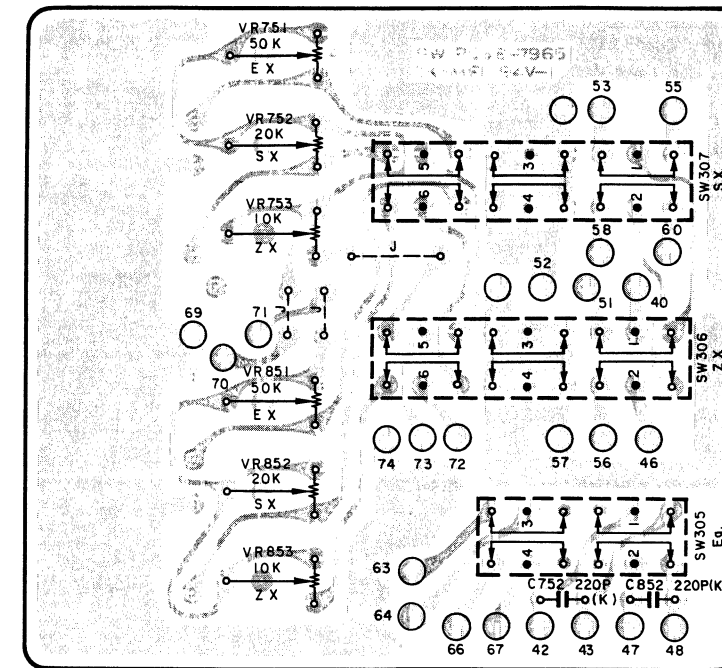


Fig. 7.9

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
VR001,002	BA04114A	Volume P.C.B. Ass'y	IC901	BA04313A	Indicator P.C.B. Ass'y
	OB07845B	Volume P.C.B.		OB07928A	Indicator P.C.B.
PL001,002	OB07298A	Slide Volume 50K (A)	Q901	OB06284A	IC MSL9350RS
	BA04416A	Lamp P.C.B. Ass'y	Q902,903	OB06066A	Transistor 2SD471
R751,851	OB07932A	Lamp P.C.B.	Q904,905	OB06013A	Transistor 2SA733
	OB08674A	Lamp 5V 200mA	ZD901	OB06268A	Zener Diode 5.6V RD5.6EB3
C751,851	BA04402A	MPX Filter Switch P.C.B. Ass'y	R901	OB09378A	Fail Safe Type Resistor 22 RSF-1B J
	OB07969A	MPX Filter Switch P.C.B.	R902,903	OB05576A	Carbon Resistor 470 ERD-25T J
SW308	OB05776A	Carbon Resistor 1M ERD-25T J	R906,907	OB01704A	Carbon Resistor 68 ERD-25T J
	OB01804A	Mylar Capacitor 3900P 50V J	R908,909		
R752,852	OB07369A	Slide Switch 22S	910,911		
	BA04420A	Headphone Switch P.C.B. Ass'y	912,913		
SW309	OB07966A	Headphone Switch P.C.B.	R914	OB05622A	Carbon Resistor 2.2K ERD-25T J
	OB01713A	Carbon Resistor 33 ERD-25T J	R915	OB09263A	Carbon Resistor 12K ERD-25T J
VR003	OB07369A	Slide Switch 22S	C901	OB01403A	Electrolytic Capacitor 47μ 16V
	BA04372A	Bias Tune Volume P.C.B. Ass'y	C902	OB01836A	Electrolytic Capacitor 47μ 10V
OB07967A	OB07967A	Bias Tune Volume P.C.B.	C903	OB01780A	Mylar Capacitor 0.1μ 50V J
	OB07355A	Volume 5K (B) x 2	FC901	OB05236A	8P Flat Cable
			FC902	OB05251A	8P Flat Cable 80mm
			FC903	OB05252A	4P Flat Cable 35mm
				OB06291A	Indicator SEL8806N (1 pce.)
			VR751,851	BA04417A	Switch P.C.B. Ass'y
			VR752,852	OB07965A	Switch P.C.B.
			C752,852	OB07237A	Semi-fixed Volume 50K
				OB07261A	Semi-fixed Volume 20K
				OB07236A	Semi-fixed Volume 10K
				OB09283A	Ceramic Capacitor 220P 50V K
				OB07314A	Push Switch (1 pce.)

7.10. Shut-off P.C.B. Ass'y

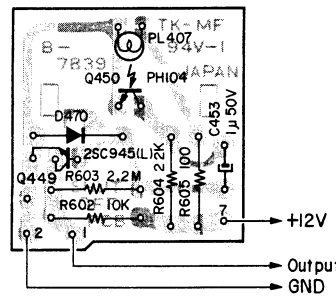


Fig. 7.10

Note: Diode is 1SS53 unless otherwise specified.

7.11. Control P.C.B. Ass'y

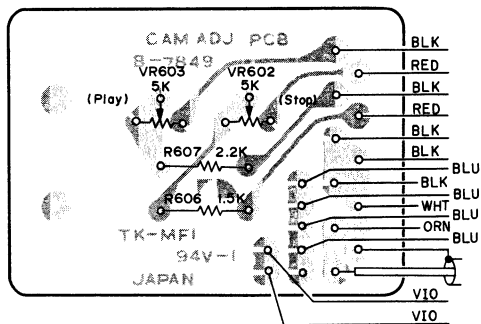


Fig. 7.11

7.12. Control Switch P.C.B. Ass'y

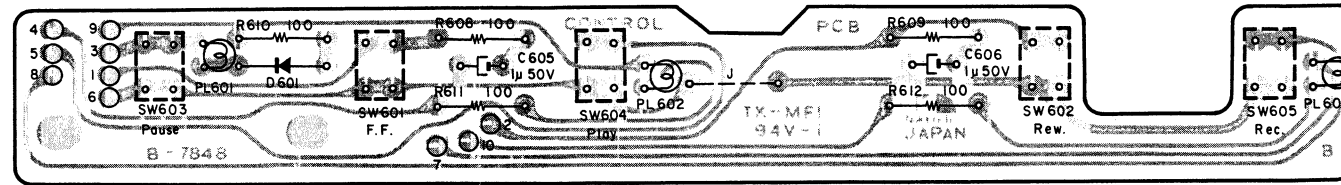


Fig. 7.12

Note: Diode is 1SS53 unless otherwise specified.

7.13. Bias Oscillator P.C.B. Ass'y

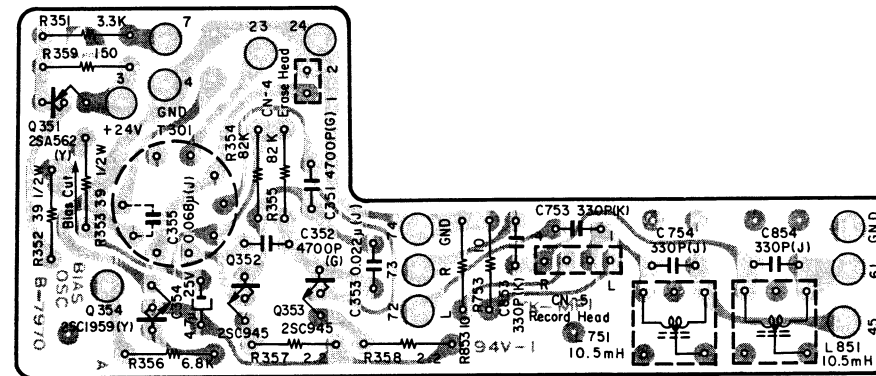


Fig. 7.13.1 Serial No.: A12001121 -

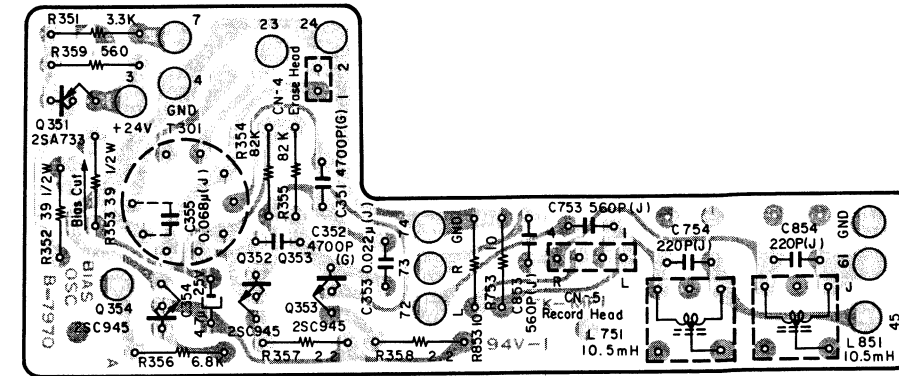


Fig. 7.13.2 Serial Nos.: A12001001 - A12001120

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	<b>BA04070A</b>	<b>Shut-off P.C.B. Ass'y</b>		<b>BA04126A</b>	<b>Control P.C.B. Ass'y</b>		<b>BA04433A</b>	<b>Bias Oscillator P.C.B. Ass'y</b> Serial No.: A12001121 -		<b>BA04433A</b>	<b>Bias Oscillator P.C.B. Ass'y</b> Serial Nos.: A12001001 - A12001120
Q449	OB07839A	Shut-off P.C.B.				Q351	OB07970A	Bias Oscillator P.C.B.	Q351	OB07970A	Bias Oscillator P.C.B.
Q450	OB01872A	Transistor 2SC945 (L)	VR602,603	OB07849B	Control P.C.B.	Q352,353	OB06202A	Transistor 2SA562 (Y)	Q352,353	OB06013A	Transistor 2SA733
D470	OB06228A	Photo Transistor PH104	R606	OB09059A	Semi-fixed Volume 5K	Q354	OB06100A	Transistor 2SC945 (A)	Q354	OB06100A	Transistor 2SC945 (A)
R602	OB06181A	Silicon Diode 1SS53	R607	OB05698A	Carbon Resistor 1.5K ERD-25T J	T301	OB06179A	Transistor 2SC1959 (Y)	T301	OB06613A	Osc. Coil
R603	OB01888A	Carbon Resistor 10K ERD-25T J		OB05622A	Carbon Resistor 2.2K ERD-25T J	L751,851	OB00068A	Osc. Coil 10.5mH	L751,851	OB00068A	Trap Coil 10.5mH
R604	OB05671A	Carbon Resistor 2.2M ERD-25T J				R351	OB01681A	Carbon Resistor 3.3K ERD-25T J	R351	OB01681A	Carbon Resistor 3.3K ERD-25T J
R605	OB05615A	Carbon Resistor 22K ERD-25T J				R352,353	OB09296A	Fail Safe Type Resistor 39 RSF-1/2B J	R352,353	OB09296A	Fail Safe Type Resistor 39 RSF-1/2B J
R606	OB09215A	Fail Safe Type Resistor 100 RDF-25S J				R354,355	OB05668A	Carbon Resistor 82K ERD-25T J	R354,355	OB05668A	Carbon Resistor 82K ERD-25T J
C453	OB01405A	Electrolytic Capacitor 1μ 50V				R356	OB01682A	Carbon Resistor 6.8K ERD-25T J	R356	OB01682A	Carbon Resistor 6.8K ERD-25T J
PL407	OB08552A	Lamp 12V 25mA				R357,358	OB09212A	Fail Safe Type Resistor 2.2 RDF-25S J	R357,358	OB09212A	Fail Safe Type Resistor 2.2 RDF-25S J
						R359	OB05795A	Carbon Resistor 150 ERD-25T J	R359	OB05795A	Carbon Resistor 150 ERD-25T J
						R753,853	OB05936A	Carbon Resistor 10 ERD-25T J	R753,853	OB05936A	Carbon Resistor 10 ERD-25T J
						C351,352	OB09191A	PP Capacitor 4700P 100V G	C351,352	OB09191A	PP Capacitor 4700P 100V G
						C353	OB09405A	PP Capacitor 0.022μ 100V J	C353	OB09405A	PP Capacitor 0.022μ 100V J
						C354	OB01402A	Electrolytic Capacitor 4.7μ 25V	C354	OB01402A	Electrolytic Capacitor 4.7μ 25V
						C355	OB09254A	PP Capacitor 0.068μ 100V J	C355	OB09254A	PP Capacitor 0.068μ 100V J
						C753,853	OB09285A	Ceramic Capacitor 330P 50V K	C753,853	OB09379A	Ceramic Capacitor 560P 50V K
						C754,854	OB09322A	PP Capacitor 330P 100V J	C754,854	OB09155A	PP Capacitor 220P 100V J
						CN4	OB08656A	2P-T Post	CN4	OB08656A	2P-T Post
						CN5	OB08654A	4P-T Post	CN5	OB08654A	4P-T Post
							OJ04417A	Osc. Coil Shield Plate (1 pce.)		OJ04417A	Osc. Coil Shield Plate (1 pce.)
							OJ03834C	Fuse P.C.B. Holder (1 pce.)		OJ03834C	Fuse P.C.B. Holder (1 pce.)
							OE00896A	Screw M3x6 Philips Binding Head (Chromate) (2 pcs.)		OE00896A	Screw M3x6 Philips Binding Head (Chromate) (2 pcs.)

8. MECHANISM ASS'Y AND PARTS LIST

8.1. Synthesis

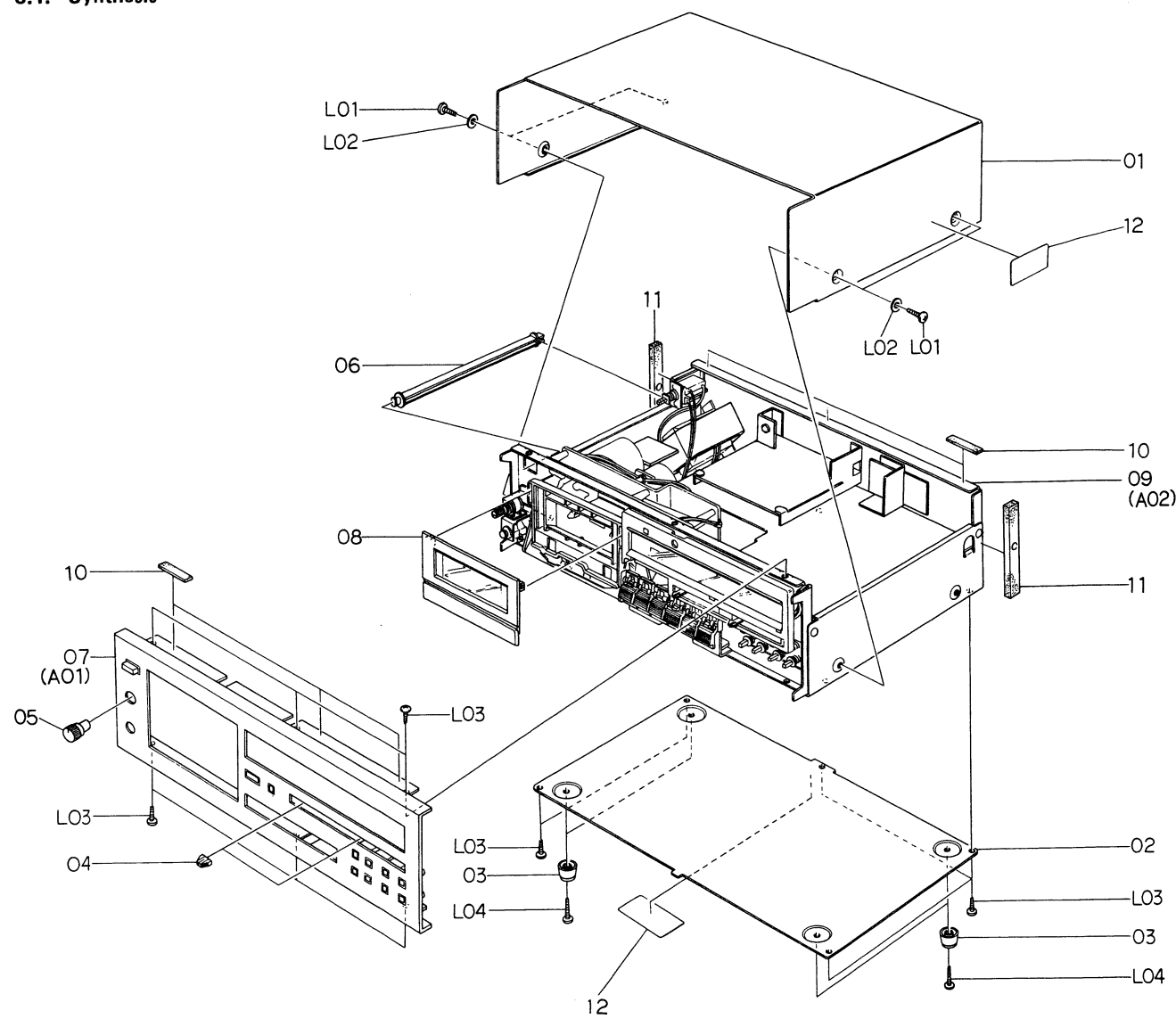


Fig. 8.1

8.2. Front Panel Ass'y (A01)

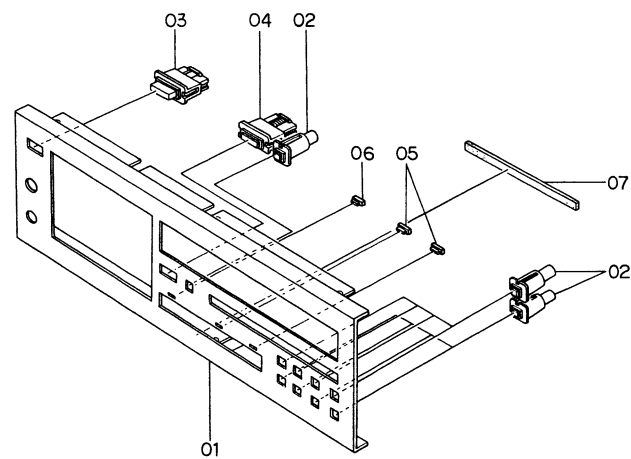


Fig. 8.2

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty	
	HA04113A	Synthesis (U.S.A. & Canada)	1		HA04113A	Synthesis (U.S.A. & Canada)	1	
	HA04114A	Synthesis (Japan)	1		HA04114A	Synthesis (Japan)	1	
	HA04117A	Synthesis (220V Class 2)	1		HA04117A	Synthesis (220V Class 2)	1	
	HA04112A	Synthesis (UK)	1		HA04112A	Synthesis (UK)	1	
	HA04116A	Synthesis (Australia)	1		HA04116A	Synthesis (Australia)	1	
	HA04115A	Synthesis (Others)	1		HA04115A	Synthesis (Others)	1	
		Serial No.:				Serial Nos.:		
		A12002626 -				A12001001 - A12002625		
01	0H03768A	Top Cover	1	01	0H03768A	Top Cover	1	
02	0H03769B	Bottom Cover	1	02	0H03769B	Bottom Cover	1	
03	0J03564A	Leg T-H	4	03	0J03564A	Leg T-H	4	
04	0H03794B	Volume Knob	2	04	0H03794B	Volume Knob	2	
05	0H03924A	Bias Adjustment Knob	1	05	0H03924A	Bias Adjustment Knob	1	
06	0J04066C	Power Switch Joint Bar	1	06	0J04066C	Power Switch Joint Bar	1	
07	HA04093A	Front Panel Ass'y	1	07	HA04093A	Front Panel Ass'y	1	
08	HA03872A	Cassette Case Cover Ass'y	1	08	HA03872A	Cassette Case Cover Ass'y	1	
09	JA03796B	Synthesis Mechanism Ass'y (U.S.A. & Canada)	1	09	JA03796A	Synthesis Mechanism Ass'y (U.S.A. & Canada)	1	
	JA03797B	Synthesis Mechanism Ass'y (Japan)	1		JA03797A	Synthesis Mechanism Ass'y (Japan)	1	
	JA03800B	Synthesis Mechanism Ass'y (220V Class 2)	1		JA03800A	Synthesis Mechanism Ass'y (220V Class 2)	1	
	JA03795B	Synthesis Mechanism Ass'y (UK)	1		JA03795A	Synthesis Mechanism Ass'y (UK)	1	
	JA03799B	Synthesis Mechanism Ass'y (Australia)	1		JA03799A	Synthesis Mechanism Ass'y (Australia)	1	
	JA03798B	Synthesis Mechanism Ass'y (Others)	1		JA03798A	Synthesis Mechanism Ass'y (Others)	1	
10	0H03781A	Cushion A	6	10	0H03781A	Cushion A	6	
11	0H03995A	Cushion B	2	11	0H03995A	Cushion B	2	
12	0M04101B	Caution Label	2	12	0M04101B	Caution Label	2	
L01	0E00858A	BT Screw M4x6 Philips Binding Head (Black Chromate)	4	L01	0E00858A	BT Screw M4x6 Philips Binding Head (Black Chromate)	4	
L02	0E00736A	Washer 4mm (Black Chromate)	4	L02	0E00736A	Washer 4mm (Black Chromate)	4	
L03	0E00857A	BT Screw M3x6 Philips Binding Head	11	L03	0E00857A	BT Screw M3x6 Philips Binding Head	11	
L04	0E00865A	BT Screw M3x10 Philips Binding Head	4	L04	0E00865A	BT Screw M3x10 Philips Binding Head	4	
	A01	HA04093A	Front Panel Ass'y	1		HA04093A	Front Panel Ass'y	1
			Serial No.:			Serial No.:		
			A12001001 -			A12001001 -		
	01	0H03934A	Front Panel	1		0H03934A	Front Panel	1
	02	HA03873A	Push Button Ass'y C	1		HA03873A	Push Button Ass'y C	1
	03	HA03874A	Push Button Ass'y D	1		HA03874A	Push Button Ass'y D	1
	04	HA03875A	Eject Button Ass'y	1		HA03875A	Eject Button Ass'y	1
	05	0H03744B	Green Lens	2		0H03744B	Green Lens	2
	06	0H03745B	Orange Lens	1		0H03745B	Orange Lens	1
	07	0J04094A	Control Button Pad	1		0J04094A	Control Button Pad	1
	-	0J04081A	Adhesive Tape 55x6	5		0J04081A	Adhesive Tape 55x6	5
	-	0J04082A	Adhesive Tape 30x6	2		0J04082A	Adhesive Tape 30x6	2



8.3. Synthesis Mechanism Ass'y (A02)

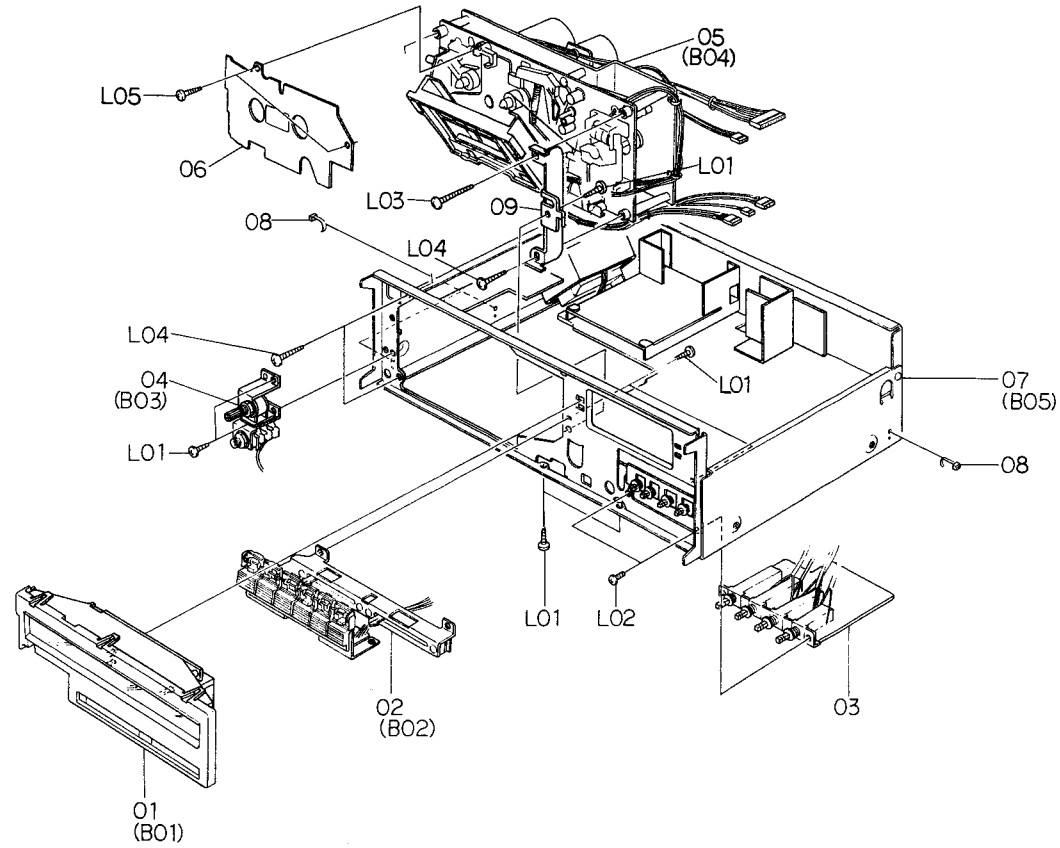


Fig. 8.3

8.4. Meter Escutcheon Ass'y (B01)

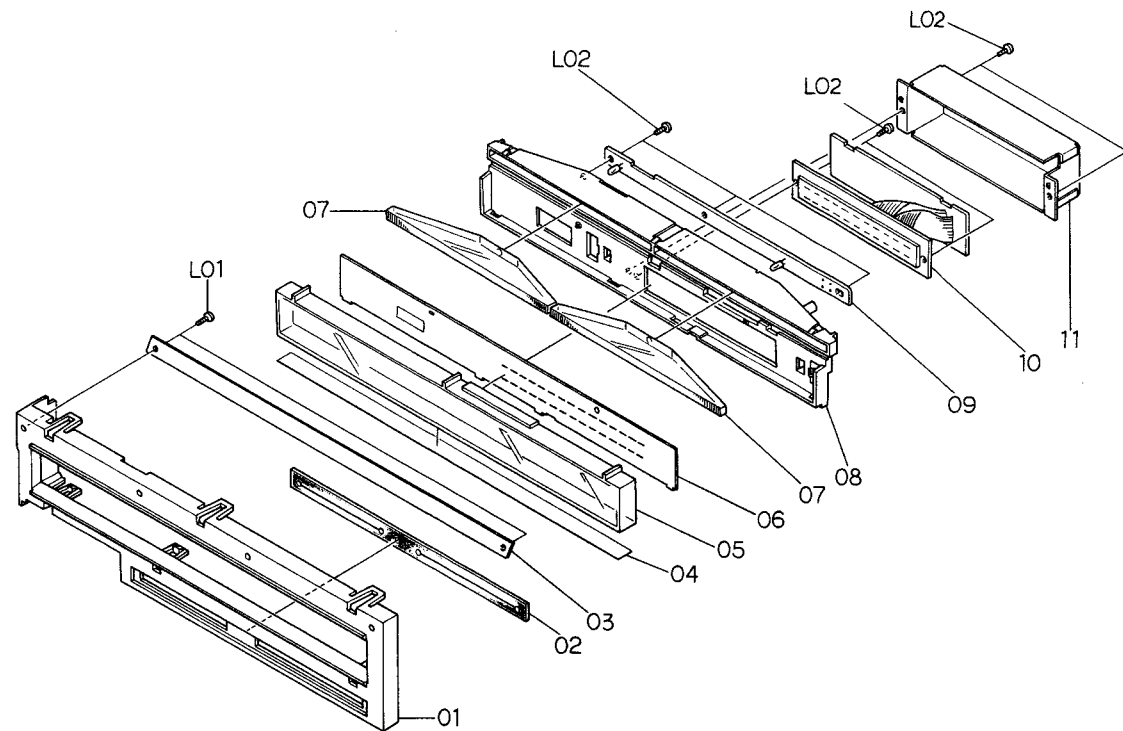


Fig. 8.4

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty		
A02	JA03796B	Synthesis Mechanism Ass'y (U.S.A. & Canada)	1	A02	JA03796A	Synthesis Mechanism Ass'y (U.S.A. & Canada)	1		
	JA03797B	Synthesis Mechanism Ass'y (Japan)	1		JA03797A	Synthesis Mechanism Ass'y (Japan)	1		
	JA03800B	Synthesis Mechanism Ass'y (220V Class 2)	1		JA03800A	Synthesis Mechanism Ass'y (220V Class 2)	1		
	JA03795B	Synthesis Mechanism Ass'y (UK)	1		JA03795A	Synthesis Mechanism Ass'y (UK)	1		
	JA03799B	Synthesis Mechanism Ass'y (Australia)	1		JA03799A	Synthesis Mechanism Ass'y (Australia)	1		
	JA03798B	Synthesis Mechanism Ass'y (Others)	1		JA03798A	Synthesis Mechanism Ass'y (Others)	1		
		Serial No.:	A12002626 -			Serial Nos.:	A12001001 - A12002625		
01	HA04089A	Meter Escutcheon Ass'y	1	01	HA04089A	Meter Escutcheon Ass'y	1		
02	JA03850A	Control Switch Holder Ass'y	1	02	JA03850A	Control Switch Holder Ass'y	1		
03	BA04417A	Switch P.C.B. Ass'y	1	03	BA04417A	Switch P.C.B. Ass'y	1		
04	JA03782A	Headphone Jack Ass'y	1	04	JA03782A	Headphone Jack Ass'y	1		
05	CA08314A	Mechanism Ass'y 482Z	1	05	CA08268A	Mechanism Ass'y 482Z	1		
06	CA08276A	Cover Plate Ass'y	1	06	CA08276A	Cover Plate Ass'y	1		
07	JA03777B	Chassis Ass'y (U.S.A. & Canada)	1	07	JA03777A	Chassis Ass'y (U.S.A. & Canada)	1		
	JA03778B	Chassis Ass'y (Japan)	1		JA03778A	Chassis Ass'y (Japan)	1		
	JA03781B	Chassis Ass'y (220V Class 2)	1		JA03781A	Chassis Ass'y (220V Class 2)	1		
	JA03776B	Chassis Ass'y (UK)	1		JA03776A	Chassis Ass'y (UK)	1		
	JA03780B	Chassis Ass'y (Australia)	1		JA03780A	Chassis Ass'y (Australia)	1		
	JA03779B	Chassis Ass'y (Others)	1		JA03779A	Chassis Ass'y (Others)	1		
08	0B08515A	Insu-Lock	18	08	0B08515A	Insu-Lock	18		
09	OJ04130B	Mechanism Bracket	1	09	OJ04130B	Mechanism Bracket	1		
L01	0E00857A	BT Screw M3x6 Philips Binding Head	7	L01	0E00857A	BT Screw M3x6 Philips Binding Head	7		
L02	0E00502A	Screw M3x5 Philips Pan Head	2	L02	0E00502A	Screw M3x5 Philips Pan Head	2		
L03	0E00924A	BT Screw M4x16 Philips Binding Head (Chromate)	1	L03	0E00924A	BT Screw M4x16 Philips Binding Head (Chromate)	1		
L04	0E00944A	BT Screw M4x15 Philips Binding Head (Black Chromate)	3	L04	0E00867A	BT Screw M4x15 Philips Binding Head	3		
L05	0E00832A	BT Screw M3x14 Philips Pan Head	2	L05	0E00832A	BT Screw M3x14 Philips Pan Head	2		
	<b>B01</b>	<b>HA04089A</b>	<b>Meter Escutcheon Ass'y</b>	<b>1</b>		<b>Serial No.:</b>	<b>A12001001 -</b>		
	01	0H03931A	Meter Escutcheon	1		01	0H03931A	Meter Escutcheon	1
	02	0H03786B	Volume Cover	1		02	0H03786B	Volume Cover	1
	03	0H03926A	Mirror	1		03	0H03926A	Mirror	1
	04	0H03928A	Light Intercepting Seal	1		04	0H03928A	Light Intercepting Seal	1
	05	0H03929A	Meter Cover	1		05	0H03929A	Meter Cover	1
	06	0H03927B	Meter Scale	1		06	0H03927B	Meter Scale	1
	07	0H03925A	Lamp House	2		07	0H03925A	Lamp House	2
	08	0H03930B	Meter Base	1		08	0H03930B	Meter Base	1
	09	BA04416A	Lamp P.C.B. Ass'y	1		09	BA04416A	Lamp P.C.B. Ass'y	1
	10	BA04313A	Indicator P.C.B. Ass'y	1		10	BA04313A	Indicator P.C.B. Ass'y	1
	11	OJ04298A	Shield Case	1		11	OJ04298A	Shield Case	1
	L01	0E00855A	BT Screw M2x6 Philips Binding Head	2		L01	0E00855A	BT Screw M2x6 Philips Binding Head	2
	L02	0E00841A	BT Screw M2x4 Philips Pan Head	7		L02	0E00841A	BT Screw M2x4 Philips Pan Head	7

8.5. Control Switch Holder Ass'y (B02)

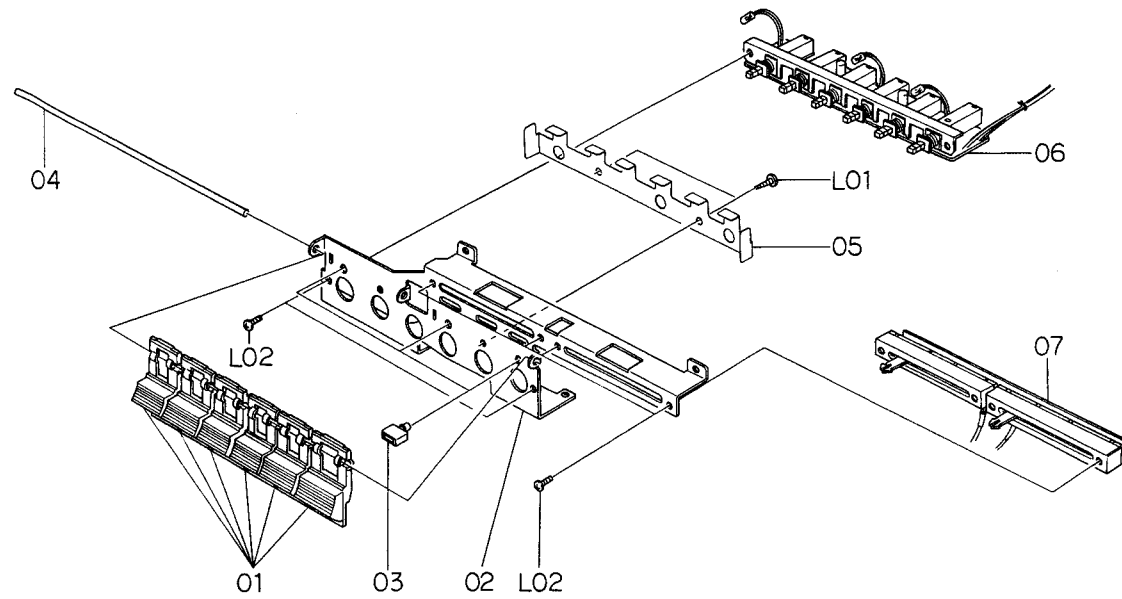


Fig. 8.5

8.6. Headphone Jack Ass'y (B03)

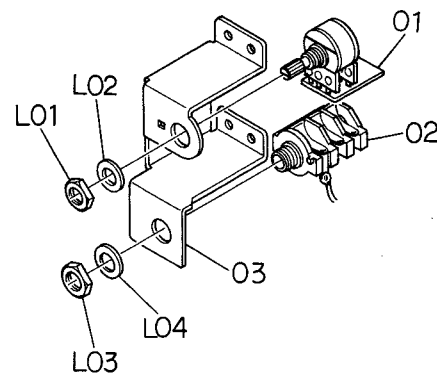


Fig. 8.6

8.7. Mechanism Ass'y 482Z (B04)

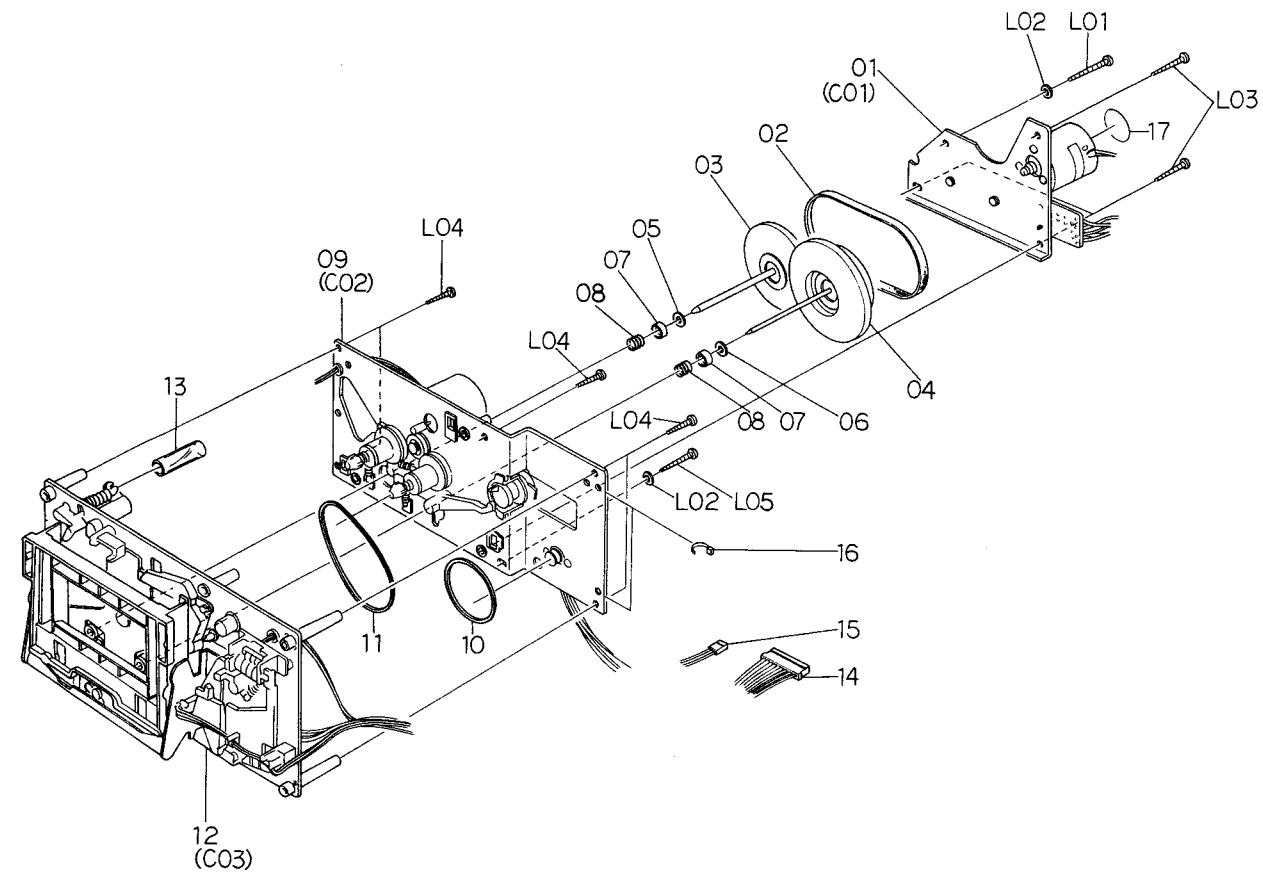


Fig. 8.7

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
B02	JA03850A	Control Switch Holder Ass'y Serial No.: A12001001 -	1	B03	JA03782A	Headphone Jack Ass'y Serial No.: A12001001 -	1
01	0H03793A	Control Button	6	01	BA04372A	Bias Tune Volume P.C.B. Ass'y	1
02	0J04355A	Control Switch Holder	1	02	0B08511A	Headphone Jack	1
03	0J04356A	Lamp Cover	3	03	0J04299A	Headphone Jack Holder	1
04	0J04073A	Control Button Shaft	1	L01	-	Bias Tune Volume Nut	(1)
05	0J04357A	Control Button Spring	1	L02	-	Bias Tune Volume Washer	(1)
06	BA04424A	Control Switch P.C.B. Ass'y	1	L03	-	Headphone Jack Nut	(1)
07	BA04114A	Volume P.C.B. Ass'y	1	L04	-	Headphone Jack Washer	(1)
L01	0E00857A	BT Screw M3x6 Philips Binding Head	2				
L02	0E00502A	Screw M3x5 Philips Pan Head	6				
L03	0E00117A	Washer 2mm	2				

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
B04	CA08314A	Mechanism Ass'y 482Z Serial No.: A12002626 -	1	B04	CA08268A	Mechanism Ass'y 482Z Serial Nos.: A12001001 - A12002625	1
01	CA08109B	Flywheel Holder Ass'y	1	01	CA08109A	Flywheel Holder Ass'y	1
02	0C08096C	Capstan Belt	1	02	0C08096C	Capstan Belt	1
03	CA08169A	Supply Flywheel E Ass'y	1	03	CA08169A	Supply Flywheel E Ass'y	1
04	CA08107A	Take-up Flywheel B Ass'y	1	04	CA08107A	Take-up Flywheel B Ass'y	1
05	0C08021B	Thrust Washer 3.1mm	1	05	0C08021B	Thrust Washer 3.1mm	1
06	0C08020B	Thrust Washer 2.6mm	1	06	0C08020B	Thrust Washer 2.6mm	1
07	0C08243A	Flange Thrust Cap	2	07	0C08243A	Flange Thrust Cap	2
08	0C08244A	Flange Thrust Spring	2	08	0C08244A	Flange Thrust Spring	2
09	CA08315A	Sub Mechanism Chassis Ass'y	1	09	CA08232A	Sub Mechanism Chassis Ass'y	1
10	0C08098B	Counter Belt B	1	10	0C08098B	Counter Belt B	1
11	0C08099B	Control Motor Belt	1	11	0C08099B	Control Motor Belt	1
12	CA08271A	Main Mechanism Chassis Ass'y	1	12	CA08271A	Main Mechanism Chassis Ass'y	1
13	0C08151A	Lid Arm Spring Tube	1	13	0C08151A	Lid Arm Spring Tube	1
14	0B08671B	12P-H Connector	1	14	0B08671B	12P-H Connector	1
15	0B08672B	3P-H Connector	1	15	0B08672A	3P-H Connector	1
16	0B08515A	Insu-Lock	9	16	0B08515A	Insu-Lock	9
17	0M03902A	Motor Label	1	17	0M03902A	Motor Label	1
L01	0E00834A	BT Screw M3x30 Philips Pan Head	1	L01	0E00834A	BT Screw M3x30 Philips Pan Head	1
L02	0E00178A	Washer 3mm	2	L02	0E00178A	Washer 3mm	2
L03	0E00833A	BT Screw M3x20 Philips Pan Head	3	L03	0E00833A	BT Screw M3x20 Philips Pan Head	3
L04	0E00883A	BT Screw M3x18 Philips Pan Head	5	L04	0E00883A	BT Screw M3x18 Philips Pan Head	5
L05	0E00835A	BT Screw M3x25 Philips Pan Head	1	L05	0E00835A	BT Screw M3x25 Philips Pan Head	1

8.8. Chassis Ass'y (B05)

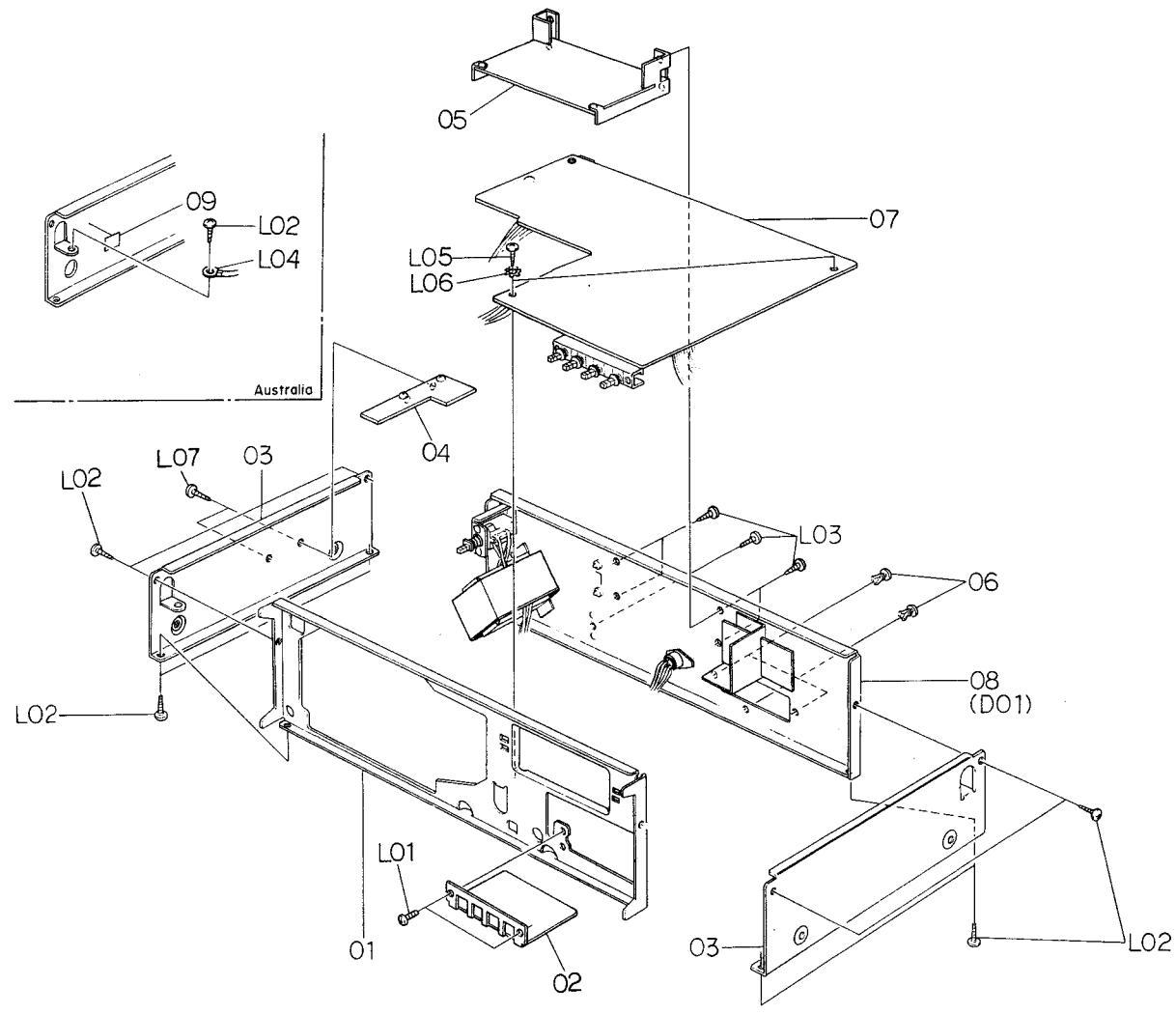


Fig. 8.8

8.9. Flywheel Holder Ass'y (C01)

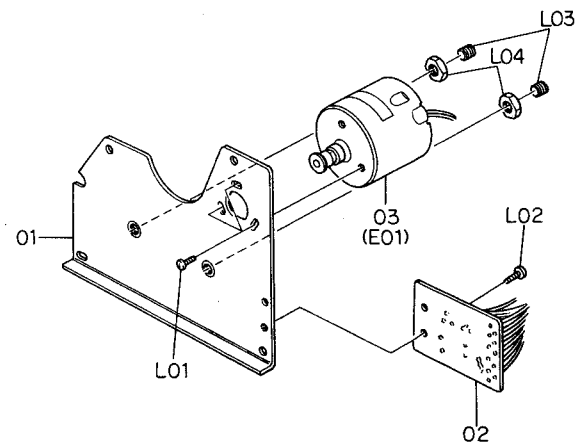


Fig. 8.9

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
B05	JA03777B	Chassis Ass'y (U.S.A. & Canada)	1	B05	JA03777A	Chassis Ass'y (U.S.A. & Canada)	1
	JA03778B	Chassis Ass'y (Japan)	1		JA03778A	Chassis Ass'y (Japan)	1
	JA03781B	Chassis Ass'y (220V Class 2)	1		JA03781A	Chassis Ass'y (220V Class 2)	1
	JA03776B	Chassis Ass'y (UK)	1		JA03776A	Chassis Ass'y (UK)	1
	JA03780B	Chassis Ass'y (Australia)	1		JA03780A	Chassis Ass'y (Australia)	1
	JA03779B	Chassis Ass'y (Others)	1		JA03779A	Chassis Ass'y (Others)	1
		Serial No.: A12002626 -				Serial Nos.: A12001001 - A12002625	
01	OJ04132A	Front Chassis	1	01	OJ04132A	Front Chassis	1
02	OJ04391A	Switch Shield Cover	1	02	OJ04391A	Switch Shield Cover	1
03	OJ04069C	Side Chassis	2	03	OJ04069C	Side Chassis	2
04	BA04433A	Bias Oscillator P.C.B. Ass'y	1	04	BA04433A	Bias Oscillator P.C.B. Ass'y	1
05	BA04511A	Logic P.C.B. Ass'y	1	05	BA04415A	Logic P.C.B. Ass'y	1
06	0B08720A	Plastic Rivet	3	06	0B08720A	Plastic Rivet	3
07	BA04360A	Main P.C.B. Ass'y (U.S.A. & Canada)	1	07	BA04360A	Main P.C.B. Ass'y (U.S.A. & Canada)	1
	BA04359A	Main P.C.B. Ass'y (Japan)	1		BA04359A	Main P.C.B. Ass'y (Japan)	1
	BA04361A	Main P.C.B. Ass'y (220V Class 2)	1		BA04361A	Main P.C.B. Ass'y (220V Class 2)	1
	BA04362A	Main P.C.B. Ass'y (UK & Australia)	1		BA04362A	Main P.C.B. Ass'y (UK & Australia)	1
	BA04363A	Main P.C.B. Ass'y (Others)	1		BA04363A	Main P.C.B. Ass'y (Others)	1
08	HA04070A	Rear Panel Ass'y (U.S.A. & Canada)	1	08	HA04070A	Rear Panel Ass'y (U.S.A. & Canada)	1
	HA04071A	Rear Panel Ass'y (Japan)	1		HA04071A	Rear Panel Ass'y (Japan)	1
	HA04074A	Rear Panel Ass'y (220V Class 2)	1		HA04074A	Rear Panel Ass'y (220V Class 2)	1
	HA04069A	Rear Panel Ass'y (UK)	1		HA04069A	Rear Panel Ass'y (UK)	1
	HA04073A	Rear Panel Ass'y (Australia)	1		HA04073A	Rear Panel Ass'y (Australia)	1
	HA04072A	Rear Panel Ass'y (Others)	1		HA04072A	Rear Panel Ass'y (Others)	1
*03	0M03700A	Earth Mark Label	1	*09	0M03700A	Earth Mark Label	1
L01	0E00502A	Screw M3x5 Philips Pan Head	2	L01	0E00502A	Screw M3x5 Philips Pan Head	2
*L02	0E00857A	BT Screw M3x6 Philips Binding Head	8	*L02	0E00857A	BT Screw M3x6 Philips Binding Head	8
L03	0E00860A	BT Screw M3x6 Philips Binding Head (Black Chromate)	5	L03	0E00860A	BT Screw M3x6 Philips Binding Head (Black Chromate)	5
*L04	0E00037A	Earth Lug B-5	1	*L04	0E00037A	Earth Lug B-5	1
L05	0E00868A	BT Screw M3x8 Philips Binding Head	2	L05	0E00868A	BT Screw M3x8 Philips Binding Head	2
L06	0E00172A	Washer 3mm Toothed Lock	2	L06	0E00172A	Washer 3mm Toothed Lock	2
L07	0E00896A	Screw M3x6 Philips Binding Head (Chromate)	2	L07	0E00896A	Screw M3x6 Philips Binding Head (Chromate)	2
		*: Depends on the versions.				*: Depends on the versions.	
				C01	CA08109B	Flywheel Holder Ass'y Serial No.: A12001001 -	1
				01	0C08013I	Flywheel Holder	1
				02	BA04126A	Control P.C.B. Ass'y	1
				03	CA08118B	Capstan Motor Ass'y	1
				L01	0E00226A	Screw M2.6x4 Philips Pan Head	3
				L02	0E00834A	BT Screw M3x5 Philips Pan Head	1
				L03	0C08068C	Thrust Screw	2
				L04	0C03857A	Lock Nut	2

8.10. Sub Mechanism Chassis Ass'y (C02)

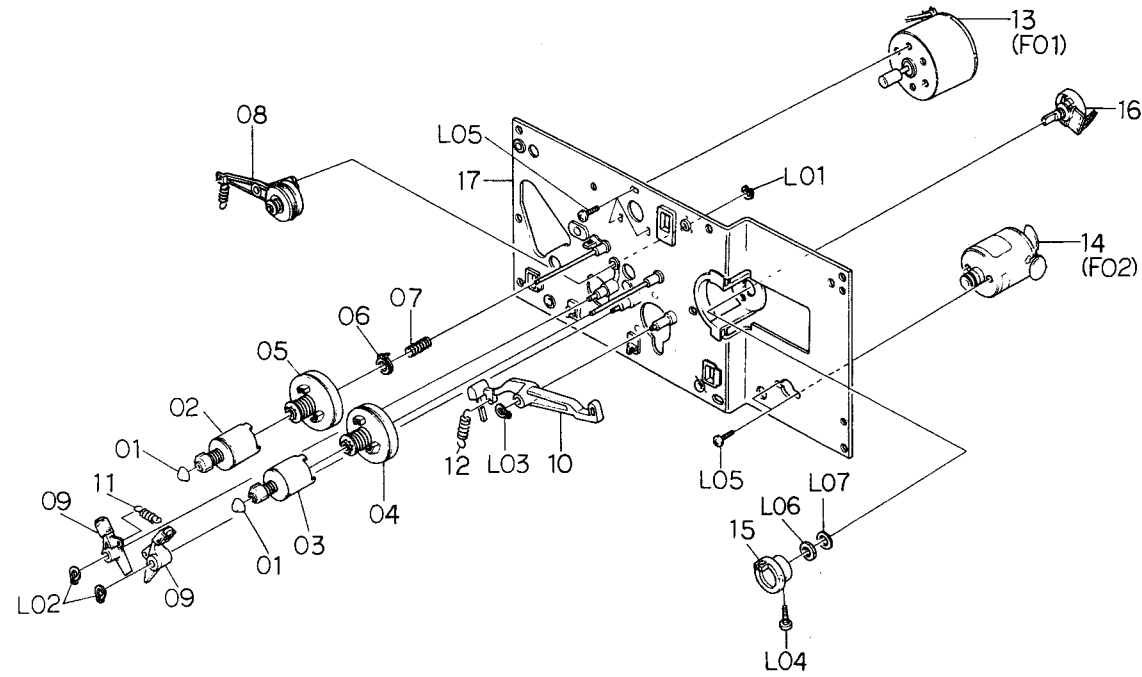


Fig. 8.10.1 Serial No.: A12002626 -

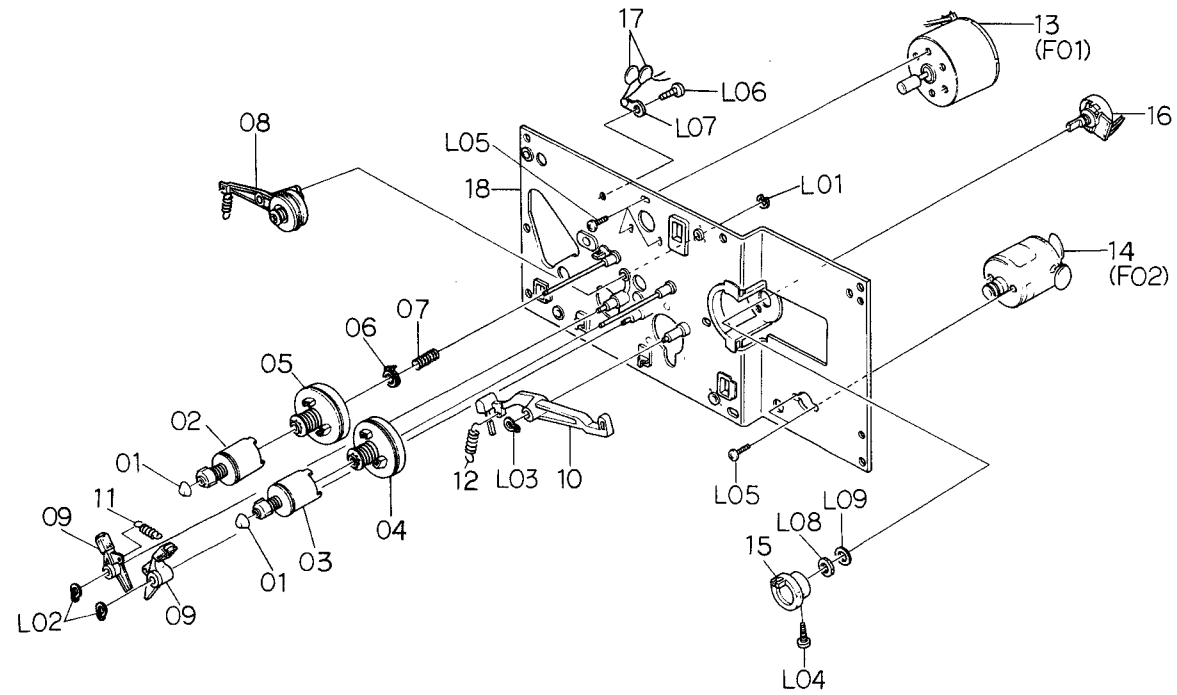


Fig. 8.10.2 Serial Nos.: A12001001 - A12002625

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
C02	CA08315A	Sub Mechanism Chassis Ass'y Serial No.: A12002626 -	1	C02	CA08232A	Sub Mechanism Chassis Ass'y Serial Nos.: A12001001 - A12002625	1	C03	CA08271A	Main Mechanism Chassis Ass'y Serial No.: A12001001 -	1	28	0C08097B	Counter Belt A	1
01	0C08039B	Reel Hub Head	2	01	0C08039B	Reel Hub Head	2	01	CA08141A	Cassette Case Holder L Ass'y	1	29	0C08067C	Eject Stopper	1
02	CA08197A	Reel Hub B Supply Ass'y	1	02	CA08197A	Reel Hub B Supply Ass'y	1	02	CA08022A	Cassette Case Holder R Ass'y	1	30	0C08134C	Eject Stopper Spring	1
03	CA08038B	Reel Hub B Take-up Ass'y	1	03	CA08038B	Reel Hub B Take-up Ass'y	1	03	CA08111A	Cassette Case Ass'y	1	31	0C08119A	Record Protector	1
04	CA08037A	Reel Hub Take-up Ass'y	1	04	CA08037A	Reel Hub Take-up Ass'y	1	04	CA08302A	Head Mount Base Ass'y	1	32	0C08194C	Damper Lock Arm	1
05	CA08064A	Reel Hub Supply Ass'y	1	05	CA08064A	Reel Hub Supply Ass'y	1	05	0C08121A	Take-up Pressure Roller Spring	1	33	0C08153A	Damper Arm Spring Tube	1
06	CA08039A	Back Tension Ass'y	1	06	CA08039A	Back Tension Ass'y	1	06	0C08250A	Supply Pressure Roller Spring	1	34	0C08116A	Record Arm Spring	1
07	0C08269A	Back Tension Spring	1	07	0C08269A	Back Tension Spring	1	07	CA08053B	Supply Pressure Roller Ass'y	1	35	CA08030A	Pneumatic Damper Ass'y	1
08	CA08193A	Idler Arm Ass'y	1	08	CA08193A	Idler Arm Ass'y	1	08	0C08122B	Supply Pressure Roller Thrust Spring	1	36	CA08023A	Supply Capstan Flange Ass'y	1
09	CA08042A	Brake Arm Ass'y	2	09	CA08042A	Brake Arm Ass'y	2	09	CA08079B	Take-up Pressure Roller Ass'y	1	37	CA08024A	Take-up Capstan Flange Ass'y	1
10	0C08030C	Brake Drive Arm	1	10	0C08030C	Brake Drive Arm	1	10	0C08183B	Take-up Pressure Roller Thrust Spring	1	38	0C08186A	Cam Drive Gear	1
11	0C08129A	Brake Arm Spring	1	11	0C08129A	Brake Arm Spring	1	11	0C08182A	Pressure Roller Drive Bar	1	39	0C08029H	Control Cam	1
12	0C08128A	Brake Drive Arm Spring	1	12	0C08128A	Brake Drive Arm Spring	1	12	CA08309A	Head Base Ass'y C	1	40	0C08152A	Counter-Load Arm Spring Tube	1
13	CA08242A	Reel Motor Ass'y	1	13	CA08117B	Reel Motor Ass'y	1	13	0C08086B	Head Base Roller	3	41	0C08117A	Counter-Load Arm Spring	1
14	CA08124A	Control Motor Ass'y	1	14	CA08124A	Control Motor Ass'y	1	14	0C08050B	Record Sensor	1	42	CA08028A	Counter-Load Arm Ass'y	1
15	0C08053B	Volume Coupler	1	15	0C08053B	Volume Coupler	1	15	0C08051E	Cassette Hold Arm	1	43	CA08183A	Main Chassis Ass'y	1
16	0B07240A	Volume Control 10K (B)	1	16	0B07240A	Volume Control 10K (B)	1	16	0C08120A	Cassette Hold Arm Spring	1	L01	0E00837A	Stopper Ring 3mm	11
17	CA08194A	Sub Chassis Ass'y	1	17	0B09290A	Ceramic Capacitor 0.01μ 50V Z	2	17	CA08196A	Back Tension Arm Ass'y	1	L02	0E00834A	BT Screw M3x30 Philips Pan Head	2
L01	0E00698A	E-Ring 2.5mm	1	18	CA08194A	Sub Chassis Ass'y	1	18	0C08254A	Sleeve	1	L03	0E00831A	BT Screw M3x10 Philips Pan Head	4
L02	0E00837A	Stopper Ring 3mm	2	L01	0E00698A	E-Ring 2.5mm	1	19	CA08027A	Head Base Drive Arm Ass'y	1	L04	0E00254A	Washer 3.1mm Plastics	2
L03	0E00838A	Stopper Ring 4mm	1	L02	0E00837A	Stopper Ring 3mm	2	20	0C08143C	Head Base Drive Arm Spring	1	L05	0E00222A	E-Ring 2mm	2
L04	0E00859A	BT Screw M2.6x6 Philips Binding Head	1	L03	0E00838A	Stopper Ring 4mm	1	21	CA08026A	Pressure Roller Drive Arm Ass'y	1	L06	0E00839A	Stopper Ring 2.5mm	1
L05	0E00226A	Screw M2.6x4 Philips Pan Head	5	L04	0E00859A	BT Screw M2.6x6 Philips Binding Head	1	22	0C08071D	Counter Reset Arm	1	L07	0E00876A	BT Screw M2.6x8 Philips Pan Head	11
L06	-	Volume Nut	(1)	L05	0E00226A	Screw M2.6x4 Philips Pan Head	5	23	0C08124B	Eject Linkage Wire	1	L08	0C08060B	Height Adjustment Nut	2
L07	-	Volume Washer	(1)	L06	0E00843A	BT Screw M2.6x4 Philips Pan Head	1	24	0C08057E	Eject Arm	1	L09	0E00142A	Washer 2.6mm	2
				L07	0E00037A	Earth Lug B-5	1	25	0C08078B	Arm Shaft	1	L10	0E00879A	BT Screw M2x15 Philips Pan Head	1
				L08	-	Volume Nut	(1)	26	CA08237A	Auto Shut-off Ass'y	1	L11	0E00838A	Stopper Ring 4mm	3
				L09	-	Volume Washer	(1)	27	CA08020A	Counter Ass'y	1	L12	0E00846A	BT Screw M3x8 Philips Pan Head	3
												L13	0E00895A	Earth Lug 3mm	2
												L14	0E00859A	BT Screw M2.6x6 Philips Binding Head	1
												L15	0C08255A	Washer 2.6mm	1

8.11. Main Mechanism Chassis Ass'y (C03)

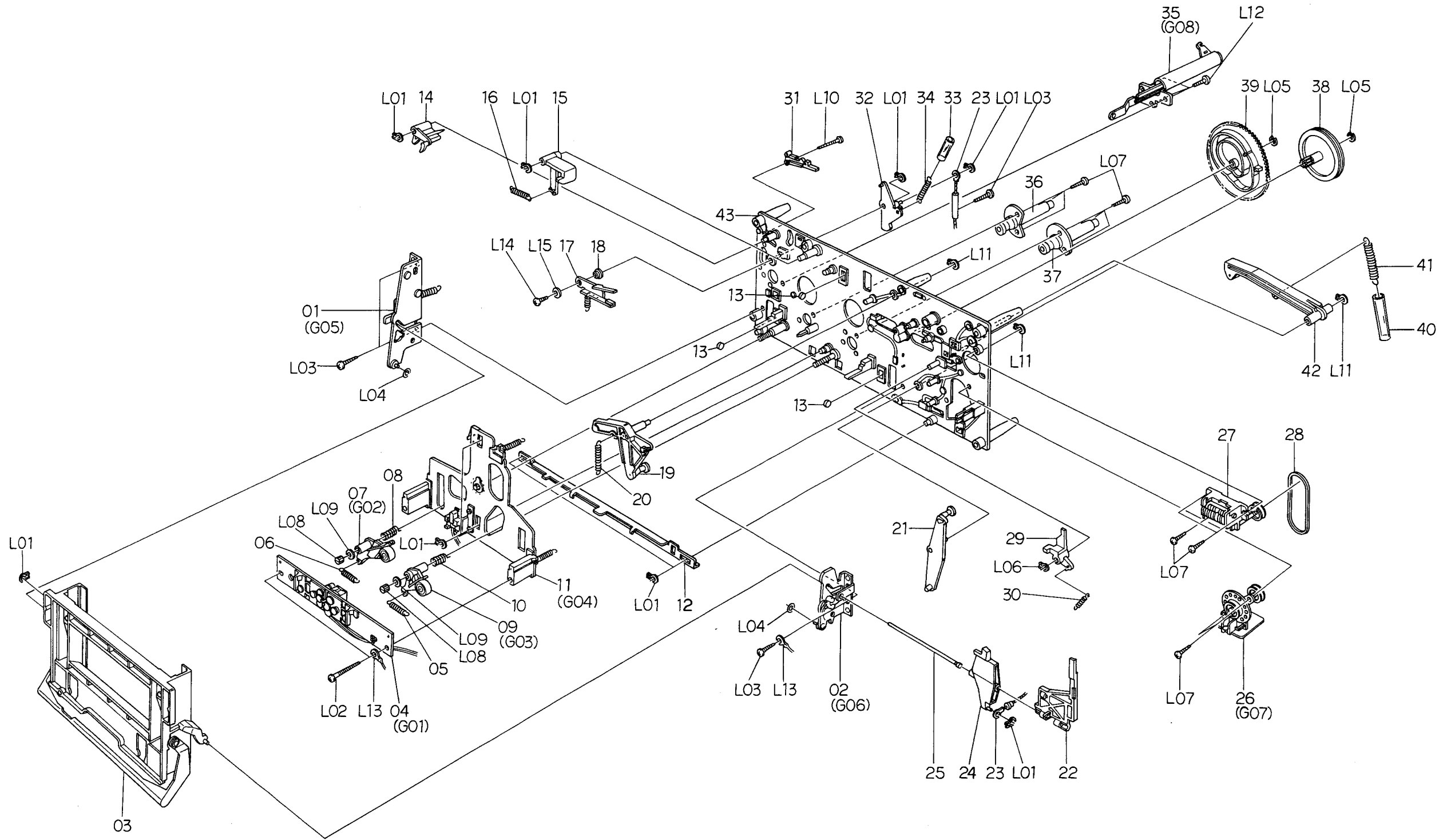


Fig. 8.11

8.12. Rear Panel Ass'y (D01)

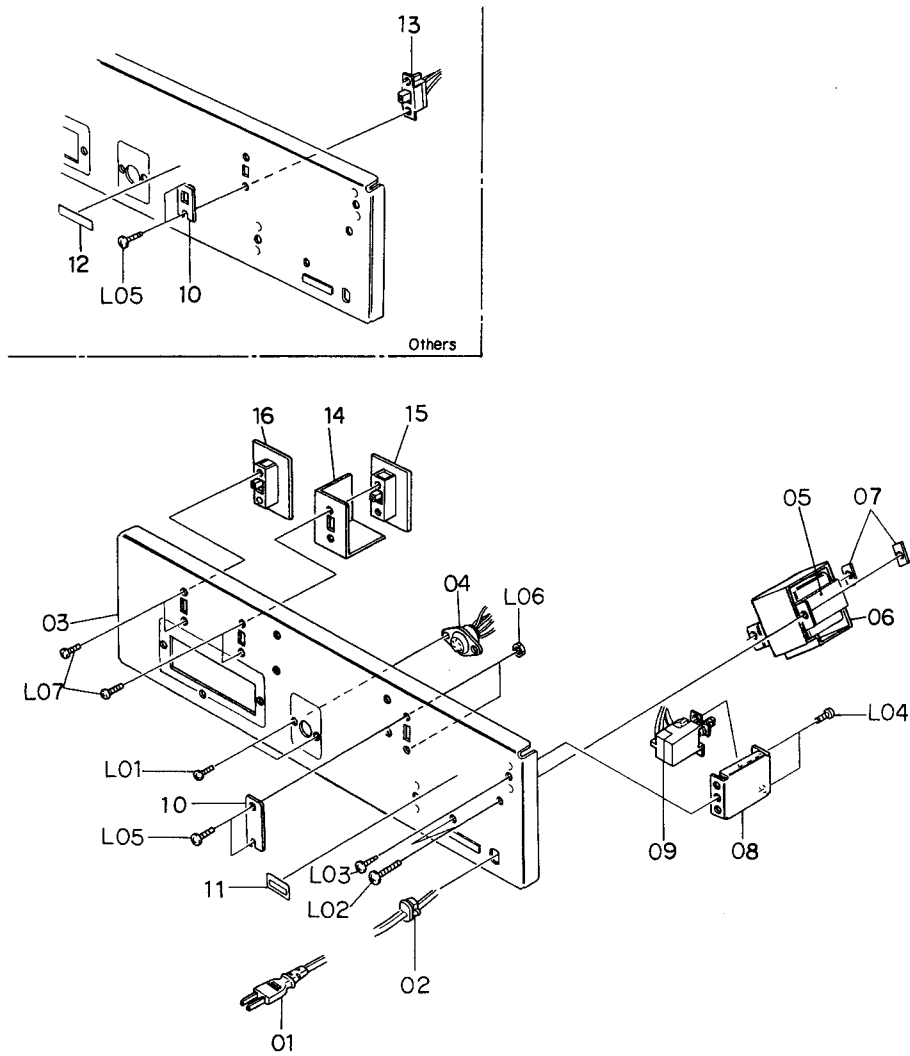


Fig. 8.12

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
D01	HA04070A	Rear Panel Ass'y (U.S.A. & Canada)	1	L05	0E00593A	Screw M3x6 Philips Binding Head (Bronze)	2
	HA04071A	Rear Panel Ass'y (Japan)	1	L06	0E00507A	Nut Hex. M3	2
	HA04074A	Rear Panel Ass'y (220V Class 2)	1	L07	0E00945A	Screw M2.6x4 Philips Binding Head (Black Chromate)	4
	HA04069A	Rear Panel Ass'y (UK)	1				
	HA04073A	Rear Panel Ass'y (Australia)	1	-	0J03644A	Chobert Rivet	2
	HA04072A	Rear Panel Ass'y (Others)	1				
		Serial No.: A12001001 -		E01	CA08118B	Capstan Motor Ass'y Serial No.: A12001001 -	1
01	0B08533A	Power Cord (U.S.A., Canada & Others)	1	01	0C08219A	Capstan Motor	1
	0B08219U	Power Cord (Japan)	1	02	0C08212C	Motor Pulley	1
	0B08093U	Power Cord (220V Class 2)	1	03	0M04077A	Motor Seal	1
	0B08348A	Power Cord (UK)	1				
	0B08666A	Power Cord (Australia)	1				
02	0B08037U	Cord Bushing (U.S.A., Canada, Japan, 220V Class 2 & Others)	1	F01	CA08242A	Reel Motor Ass'y Serial No.: A12002626 -	1
	0B08351A	Cord Bushing 4K-4 (UK)	1	01	0C08272A	Reel Motor	1
	0B08325U	Cord Bushing (Australia)	1	02	0C08063F	Reel Motor Pulley	1
	0H03938B	Rear Panel	1	03	0B09290A	Ceramic Capacitor 0.01µ 50V Z	1
	0B08687A	6P DIN Socket	1				
03	0B06652A	Power Transformer (U.S.A. & Canada)	1	F01	CA08117B	Reel Motor Ass'y Serial Nos.: A12001001 - A12002625	1
	0B06653A	Power Transformer (Japan)	1	01	0C08218A	Reel Motor	1
	0B06655A	Power Transformer (220V Class 2 & UK)	1	02	0C08063F	Reel Motor Pulley	1
	0B06656A	Power Transformer (Australia)	1				
	0B06654A	Power Transformer (Others)	1				
04	0J04426B	Power Transformer Shield Cover	1	F02	CA08124A	Control Motor Ass'y Serial No.: A12001001 -	1
	0C01162B	Bolt Receptacle Plate	1	01	0C08137A	Control Motor	1
	0J04076A	Power Switch Holder	1	02	0C08064A	Control Motor Pulley	1
	0B07299A	Power Switch (U.S.A. & Canada)	1	03	0B09292A	Ceramic Capacitor 0.1µ 50V Z	2
	0B07301A	Power Switch (Japan)	1	04	0M03985A	Control Motor Label	1
05	0B07252A	Power Switch (220V Class 2, UK, Australia & Others)	1	05	0M03988A	Motor Seal B	1
	0J03663C	Switch Cover (U.S.A., Canada, Japan, 220V Class 2, UK & Australia)	1	G01	CA08302A	Head Mount Base Ass'y Serial No.: A12001001 -	1
	0M03946A	Voltage Selector Lock Plate C (Others)	1	01	0C08028C	Head Height Adjustment Gear	1
	0M03551B	Pass Label	1	02	0C08027E	Head Height Adjustment Screw	2
	0M03794A	Voltage Label 100V (Japan)	1	03	0C08026D	Azimuth Alignment Screw	1
06	0M03796A	Voltage Label 220V (220V Class 2)	1	04	0C08161B	Spring Stopper	1
	0M03797A	Voltage Label 240V (UK & Australia)	1	05	0C08187B	Head Plate Spring	1
	0M03955A	Voltage Label 120V/220-240V (Others)	1	06	CA08083C	Head Mount Base Sub Ass'y	1
	0B07092U	Voltage Selector (Others)	1	07	CA08137A	P-8L Playback Head Ass'y	1
	0J04389A	Headphone Switch Shield Plate	1	08	CA08300A	R-8L Record Head Ass'y	1
07	BA04420A	Headphone Switch P.C.B. Ass'y	1				
	BA04402A	MPX Filter Switch P.C.B. Ass'y	1	G02	CA08053B	Supply Pressure Roller Ass'y Serial No.: A12001001 -	1
	0M03905A	UL Label	1	01	0C08164G	Pressure Roller	1
	0M04214A	Serial Number Plate	1	02	0C08189C	Supply Tape Guide	1
	0M04097B	Fuse Caution Label (U.S.A. & Canada)	1	03	CA08061A	Supply Pressure Roller Arm Ass'y	1
08	0M03844B	Power Cord Label (UK)	1	L01	0E00042A	E-Ring 1.5mm	1
	0E00714A	Screw M2.6x6 Philips Binding Head (Bronze)	2	L02	0C08024A	Washer 2mm	2
	0E00756A	Screw M4x8 Philips Binding Head (Bronze)	2	L03	0E00788A	BT Screw M2x8 Philips Pan Head	1
	0E00860A	BT Screw M3x6 Philips Binding Head (Black Chromate)	1				
	0E00502A	Screw M3x5 Philips Pan Head	2				

8.13. Capstan Motor Ass'y (E01)

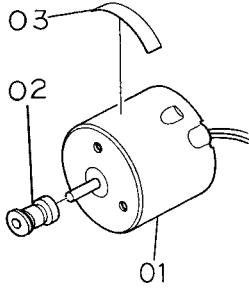


Fig. 8.13

8.14. Reel Motor Ass'y (F01)

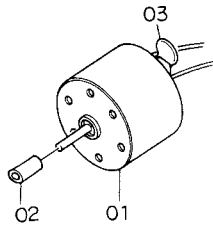


Fig. 8.14.1 Serial No.: A12002626 -

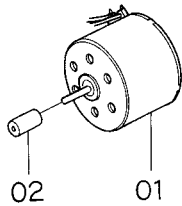


Fig. 8.14.2 Serial Nos.: A12001001 - A12002625

8.15. Control Motor Ass'y (F02)

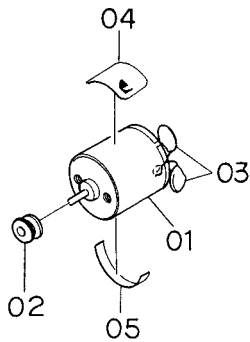


Fig. 8.15

8.16. Head Mount Base Ass'y (G01)

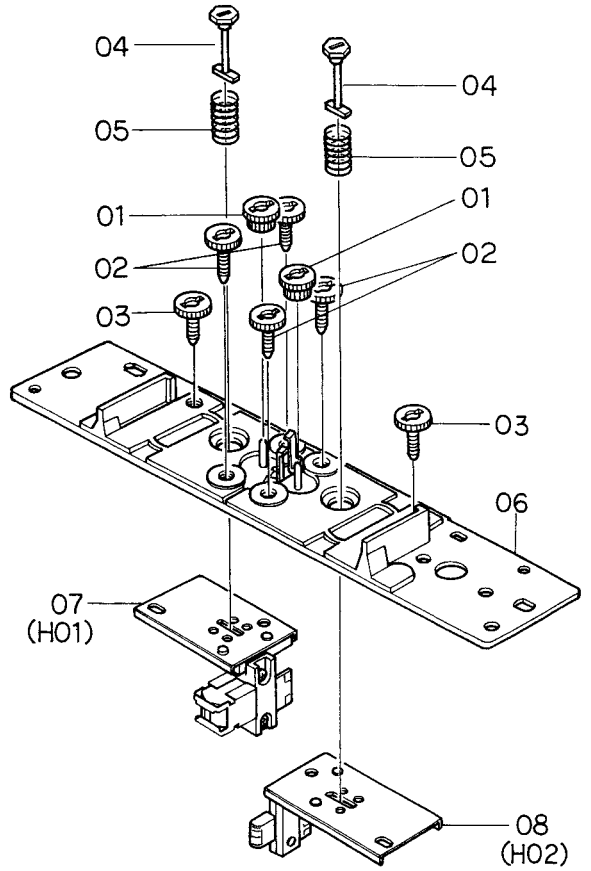


Fig. 8.16

8.17. Supply Pressure Roller Ass'y (G02)

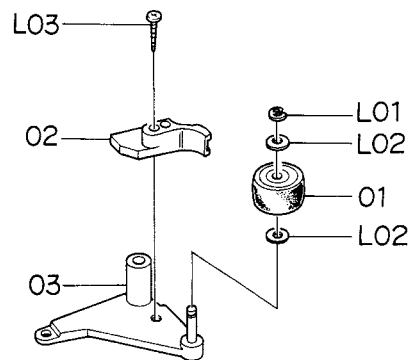


Fig. 8.17

8.18. Take-up Pressure Roller Ass'y (G03)

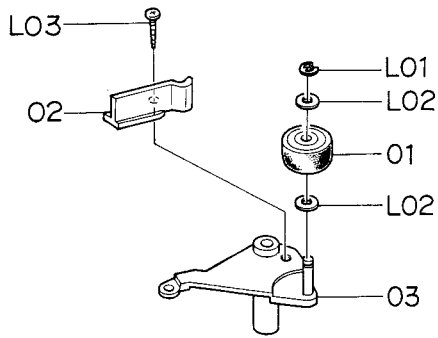


Fig. 8.18

8.19. Head Base Ass'y C (G04)

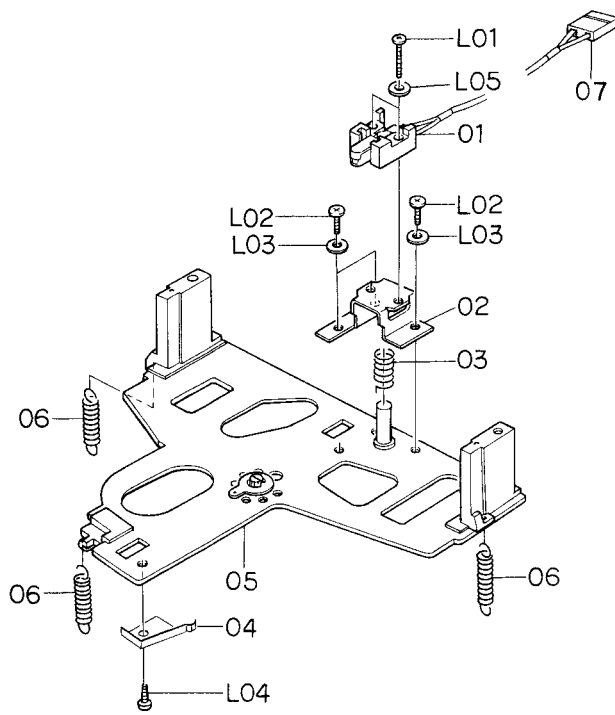


Fig. 8.19

8.20. Cassette Case Holder L Ass'y (G05)

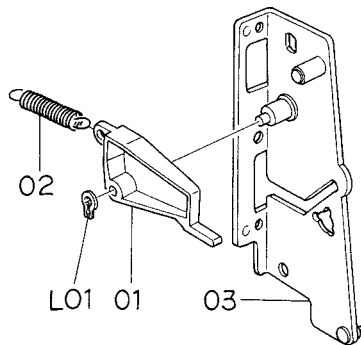


Fig. 8.20

8.21. Cassette Case Holder R Ass'y (G06)

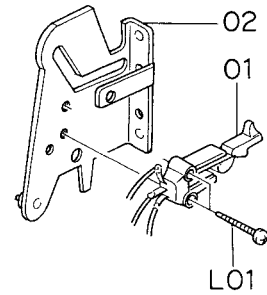


Fig. 8.21

8.22. Auto Shut-off Ass'y (G07)

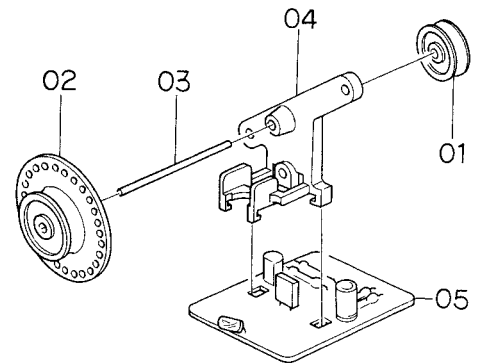


Fig. 8.22

8.23. Pneumatic Damper Ass'y (G08)

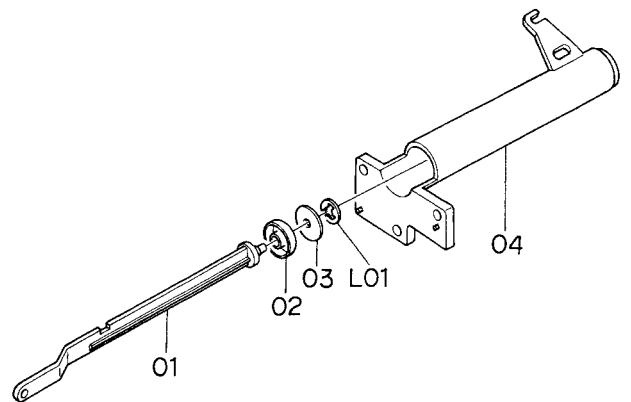


Fig. 8.23



8.24. P-8L Playback Head Ass'y (H01)

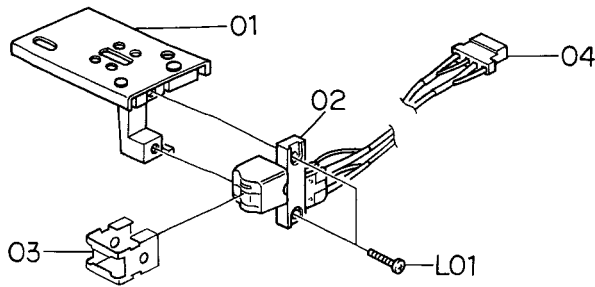


Fig. 8.24

8.25. R-8L Record Head Ass'y (H02)

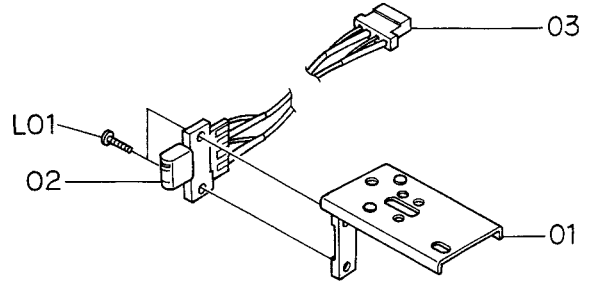


Fig. 8.25

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
<b>G03</b>	<b>CA08079B</b>	<b>Take-up Pressure Roller Ass'y</b> Serial No.: A12001001 -	<b>1</b>	<b>G07</b>	<b>CA08237A</b>	<b>Auto Shut-off Ass'y</b> Serial No.: A12001001 -	<b>1</b>
01	0C08164G	Pressure Roller	1	01	0C08047A	Shut-off Pulley A	1
02	0C08181C	Take-up Tape Guide	1	02	0C08206B	Shut-off Pulley B	1
03	CA08073B	Take-up Pressure Roller Arm Ass'y	1	03	0C08088B	Shut-off Pulley Shaft	1
L01	0E00042A	E-Ring 1.5mm	1	04	0C08207B	Shut-off Pulley Holder	1
L02	0C08024A	Washer 2mm	2	05	BA04070A	Shut-off P.C.B. Ass'y	1
L03	0E00788A	BT Screw M2x8 Philips Pan Head	1	<b>G08</b>	<b>CA08030A</b>	<b>Pneumatic Damper Ass'y</b> Serial No.: A12001001 -	<b>1</b>
<b>G04</b>	<b>CA08309A</b>	<b>Head Base Ass'y C</b> Serial No.: A12001001 -	<b>1</b>	01	0C08058C	Damper Piston	1
01	GA02017A	E-8L Erase Head	1	02	0C08102C	Damper Ring	1
02	0C08158D	EH Hold Plate	1	03	0C08010C	Damper Plate	1
03	0C08166A	EH Hold Plate Spring	1	04	0C08059D	Sylinder	1
04	0C08174D	Cassette Hold Spring	1	L01	0E00874A	Stopper Ring CS 2mm	1
05	CA08003Q	Head Base Ass'y	1	<b>H01</b>	<b>CA08137A</b>	<b>P-8L Playback Head Ass'y</b> Serial No.: A12001001 -	<b>1</b>
06	0C08175A	Head Base L Spring	3	01	CA08307A	Playback Head Plate Ass'y	1
07	0B08891A	2P-H Connector	1	02	GA02034A	P-8L Playback Head	1
L01	0E00951A	Screw M1.7x7 Philips Pan Head	2	03	0C08169D	Pad Lifter 54	1
L02	0E00909A	Screw M2x6 Philips Pan Head	3	04	0B08704C	4P-H Connector	1
L03	0E00117A	Washer 2mm	3	L01	0E00886A	Screw M1.7x6.5 Philips Pan Head	2
L04	0E00853A	BT Screw M2x3 Philips Pan Head	1	<b>H02</b>	<b>CA08300A</b>	<b>R-8L Record Head Ass'y</b> Serial No.: A12001001 -	<b>1</b>
L05	0E00952A	Washer 1.7mm	2	01	CA08308B	Record Head Plate Ass'y	1
<b>G05</b>	<b>CA08141A</b>	<b>Cassette Case Holder L Ass'y</b> Serial No.: A12001001 -	<b>1</b>	02	GA01050A	R-8L Record Head	1
01	0C08073C	Lid Arm A	1	03	0B08890A	4P-H Connector	1
02	0C08114A	Lid Arm Spring	1	L01	0E00887A	Screw M1.7x4 Philips Pan Head	1
03	CA08090F	Cassette Case Holder L Sub Ass'y	1				
L01	0E00837A	Stopper Ring 3mm	1				
<b>G06</b>	<b>CA08022A</b>	<b>Cassette Case Holder R Ass'y</b> Serial No.: A12001001 -	<b>1</b>				
01	0C08133A	Eject Sensor	1				
02	CA08044A	Cassette Case Holder R Sub Ass'y	1				
L01	0E00840A	BT Screw M2x8 Philips Pan Head	2				

9. OVERALL TIMING CHART

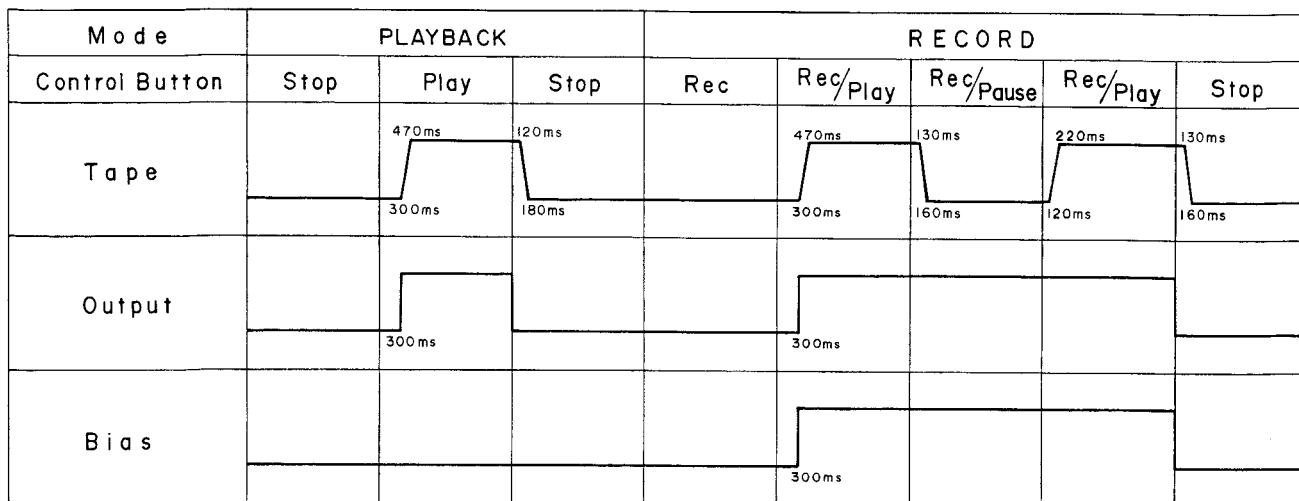


Fig. 9

### 10. EQ. AMP. FREQUENCY RESPONSE

#### 10.1. Playback Frequency Response

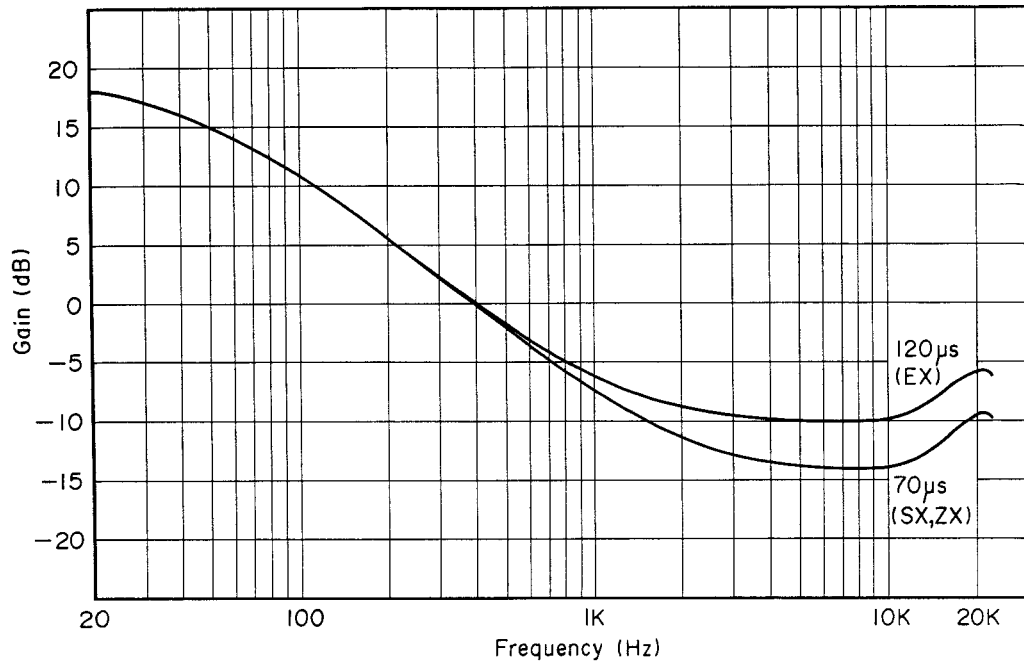


Fig. 10.1

#### 10.2. Record Current Frequency Response

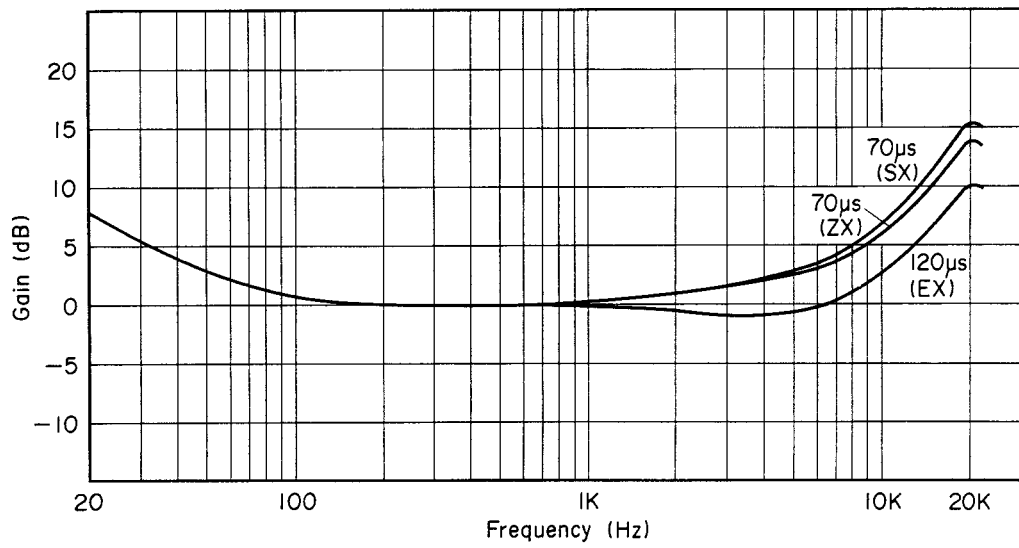
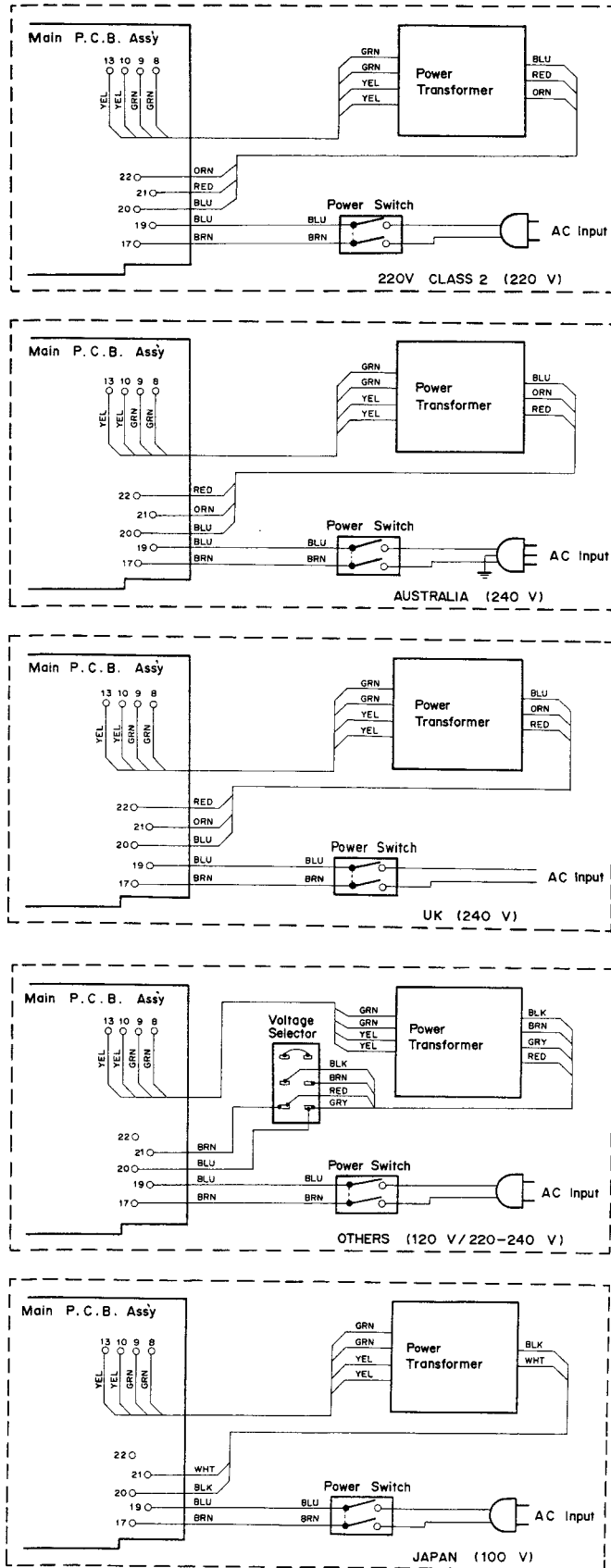


Fig. 10.2

## 11. WIRING DIAGRAM



Notes: 1. Table of wire colors

- BLK – Black
- BLU – Blue
- ORN – Orange
- GRY – Gray
- GRN – Green
- RED – Red
- BRN – Brown
- YEL – Yellow
- WHT – White
- VIO – Violet

2. Component side view of the P.C.B. is illustrated unless otherwise specified.

Fig. 11.1

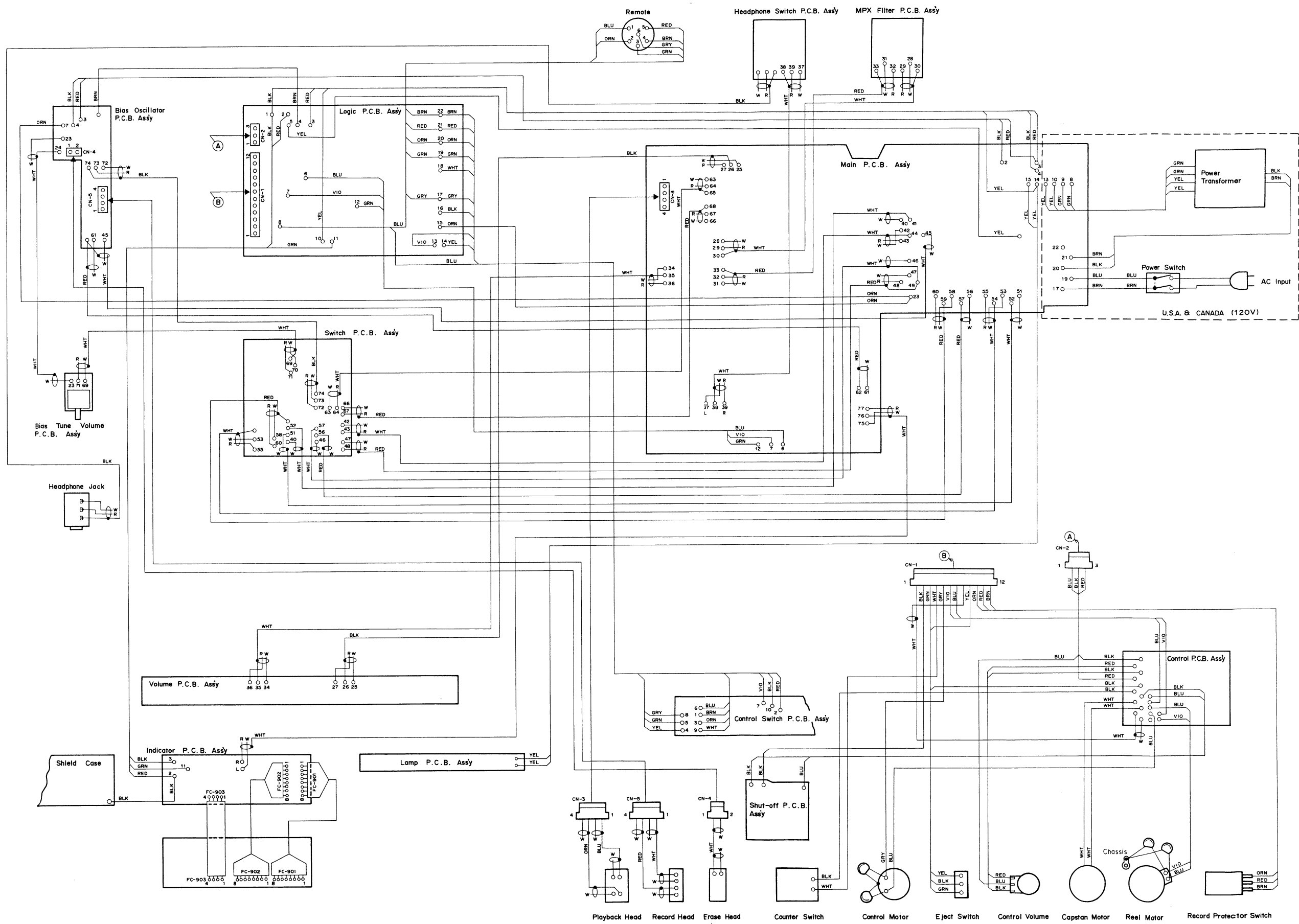


Fig. 11.2

12. BLOCK DIAGRAMS

12.1. Amplifier Section

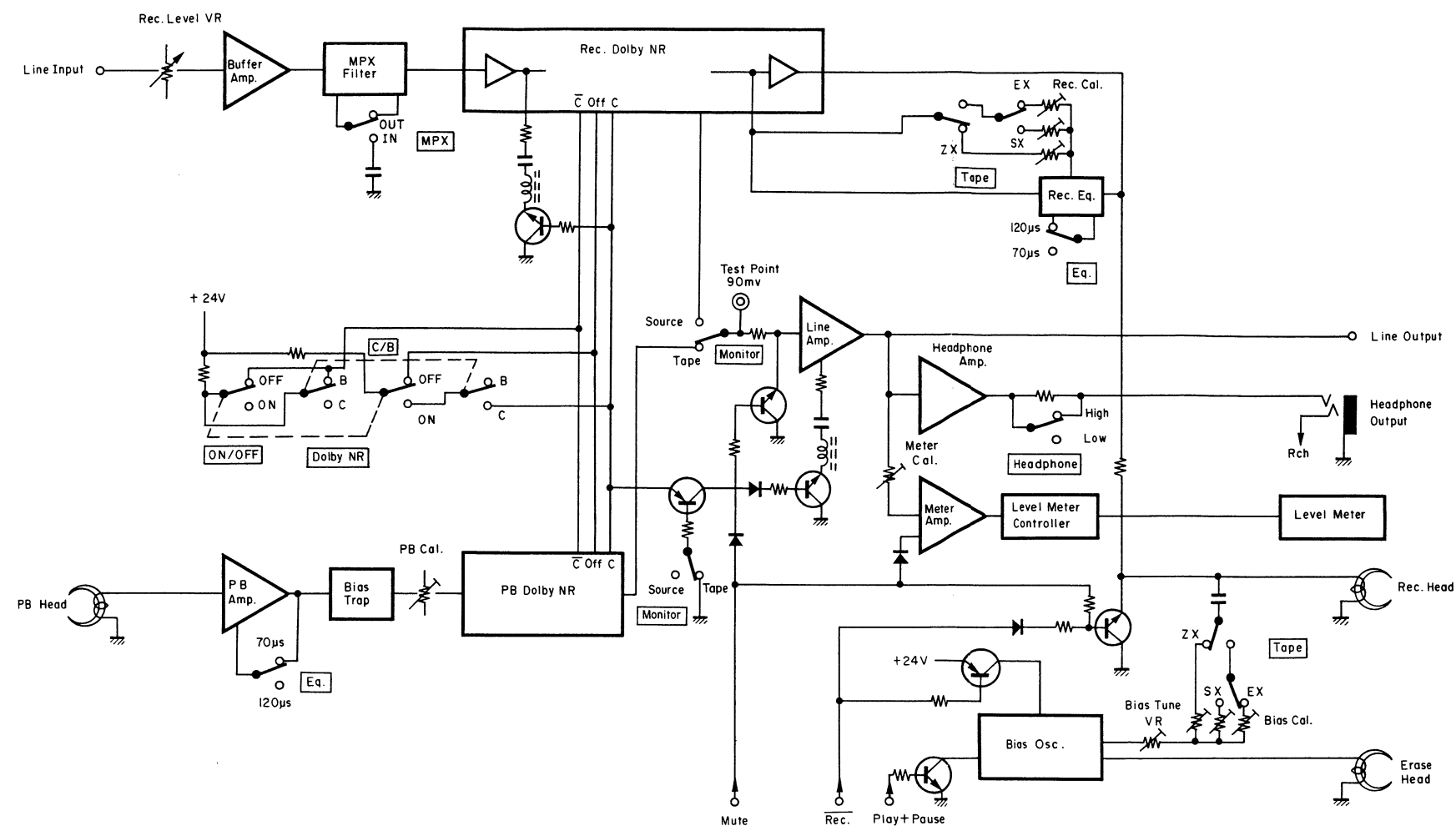


Fig. 12.1

12.2. Mechanism Control Section

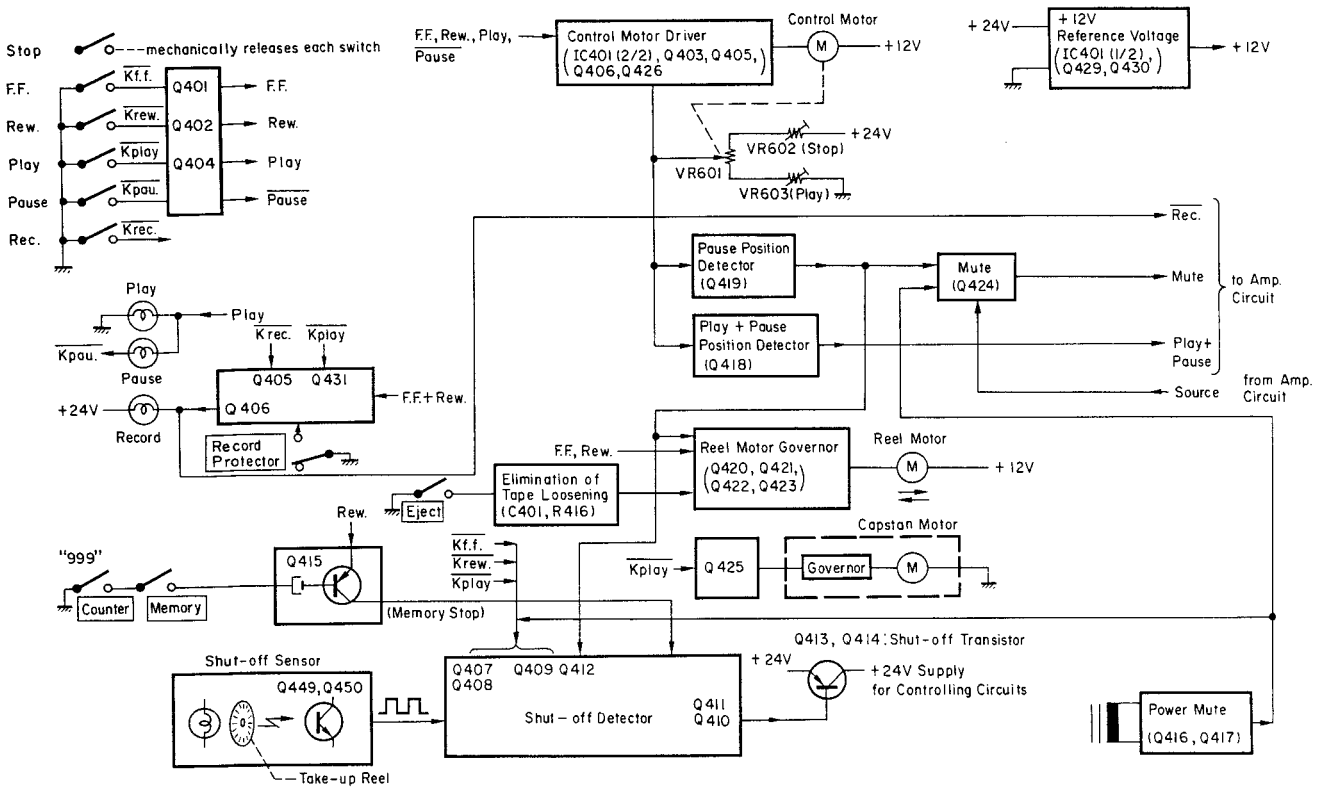


Fig. 12.2

## 13. SCHEMATIC DIAGRAMS

### 13.1. IC Block Diagrams

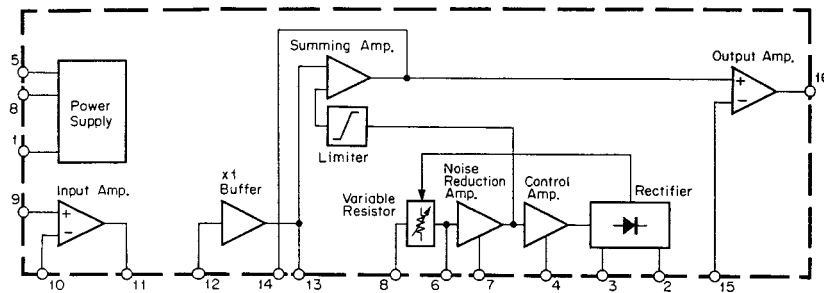


Fig. 13.1 Dolby NR IC  $\mu$ A7300PC

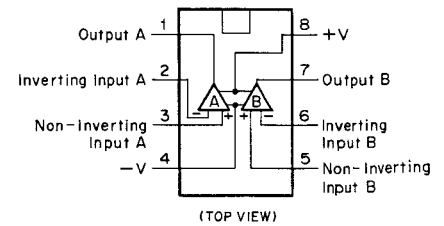


Fig. 13.2 Operational Amp. IC 4558

### 13.2. Attention to Servicemen

#### (1) Parts Replacement

Following parts shall be replaced with the specified ones. Refer to the parts list.

- (a) Power Supply Circuit
  - Power Cord
  - Power Transformer T1
  - Power Switch SW1
- (b) Main P.C.B. Ass'y
  - F401, 402
  - M2, 3
  - D401
  - IC401
  - R301, 303, 304, 306, 719, 720, 819, 820
- (c) Logic P.C.B. Ass'y
  - Q402, 413, 420, 421, 425, 427, 428, 429, 430
  - R453, 470
- (d) Control Switch P.C.B. Ass'y
  - R610, 611, 612
  - PL601, 602, 603
- (e) Shut-off P.C.B. Ass'y
  - R605
  - PL407
- (f) Lamp P.C.B. Ass'y
  - PL001, 002
- (g) Indicator P.C.B. Ass'y
  - R901
- (h) Bias Oscillator P.C.B. Ass'y
  - R352, 353, 357, 358

#### (2) Insulation Check

Before returning the repaired N-482Z to a customer, check to insure that the exposed part is accurately insulated from the AC line by measuring the leakage current or the insulation resistance between them.



13.3. Mechanism Control Section

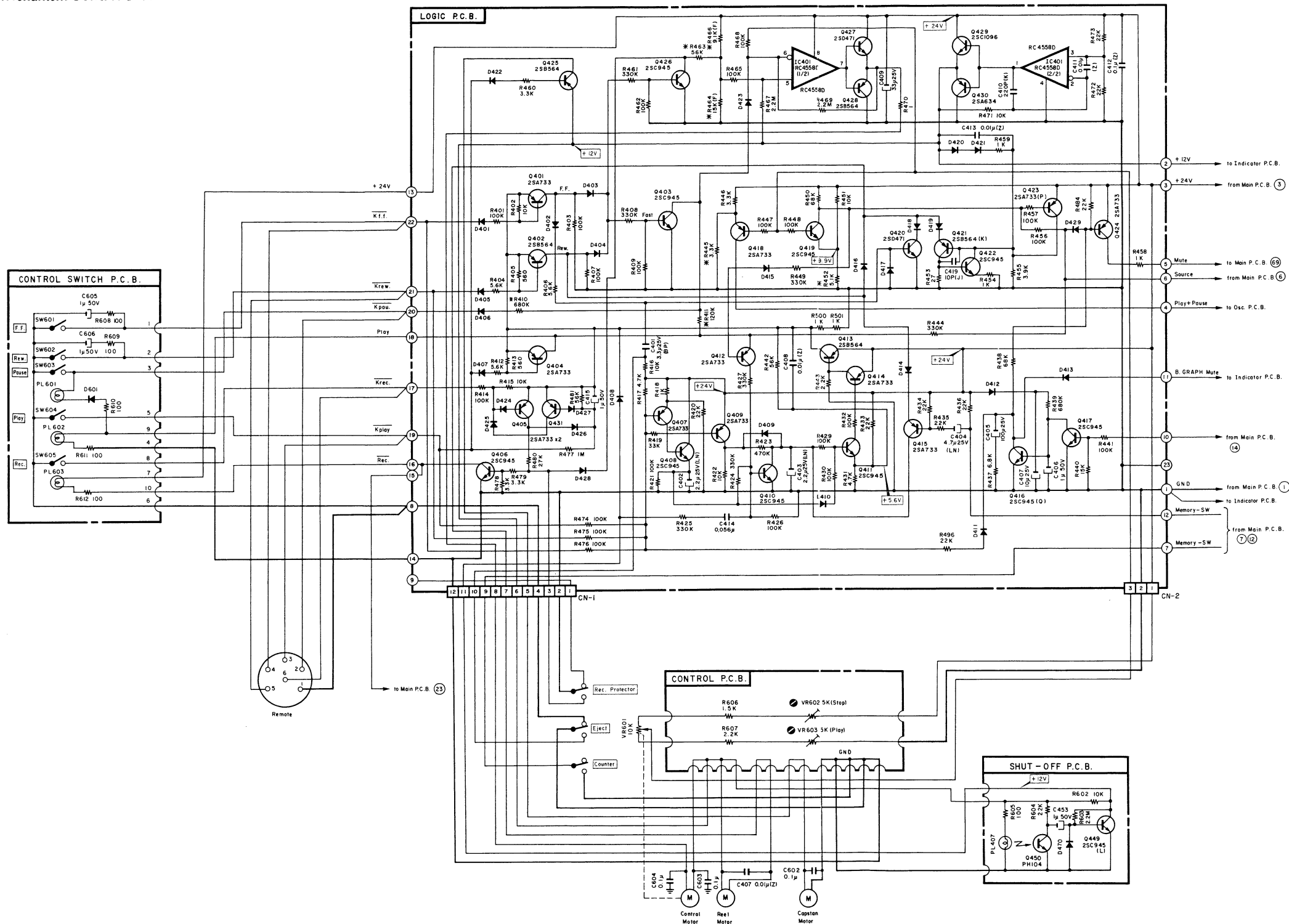


Fig. 13.3.1 Serial No.: A12002626 -

- Notes: 1. Diode is 1SS53, 1S953, or 1S1555 unless otherwise specified.
- 2. Resistor and capacitor marked with \* show typical value.

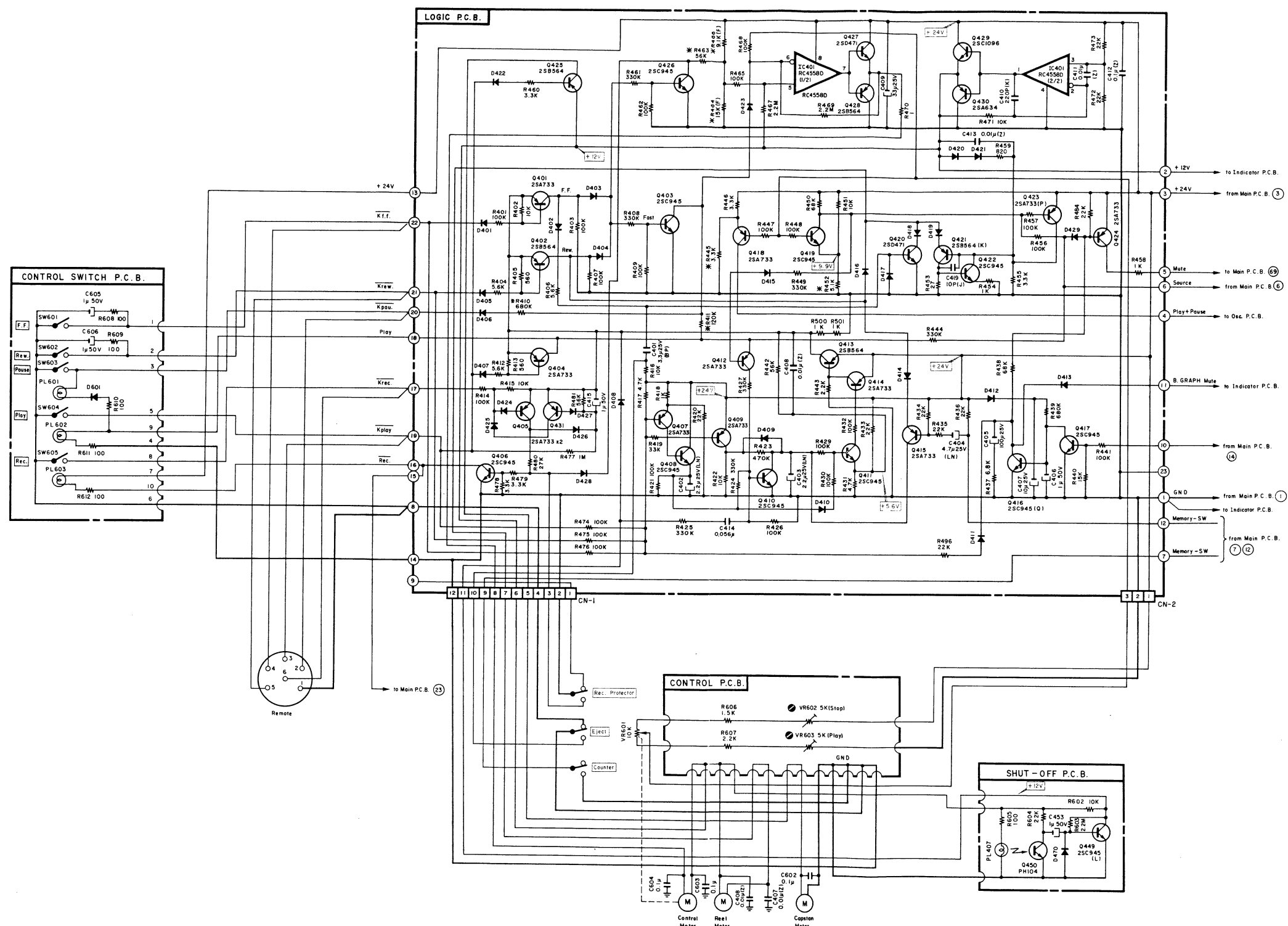


Fig. 13.3.2 Serial Nos.: A12001001 – A12002625

- Notes: 1. Diode is 1S553, 1S953, or 1S1555 unless otherwise specified.  
 2. Resistor and capacitor marked with \* show typical value.

13.4. Amplifier Section

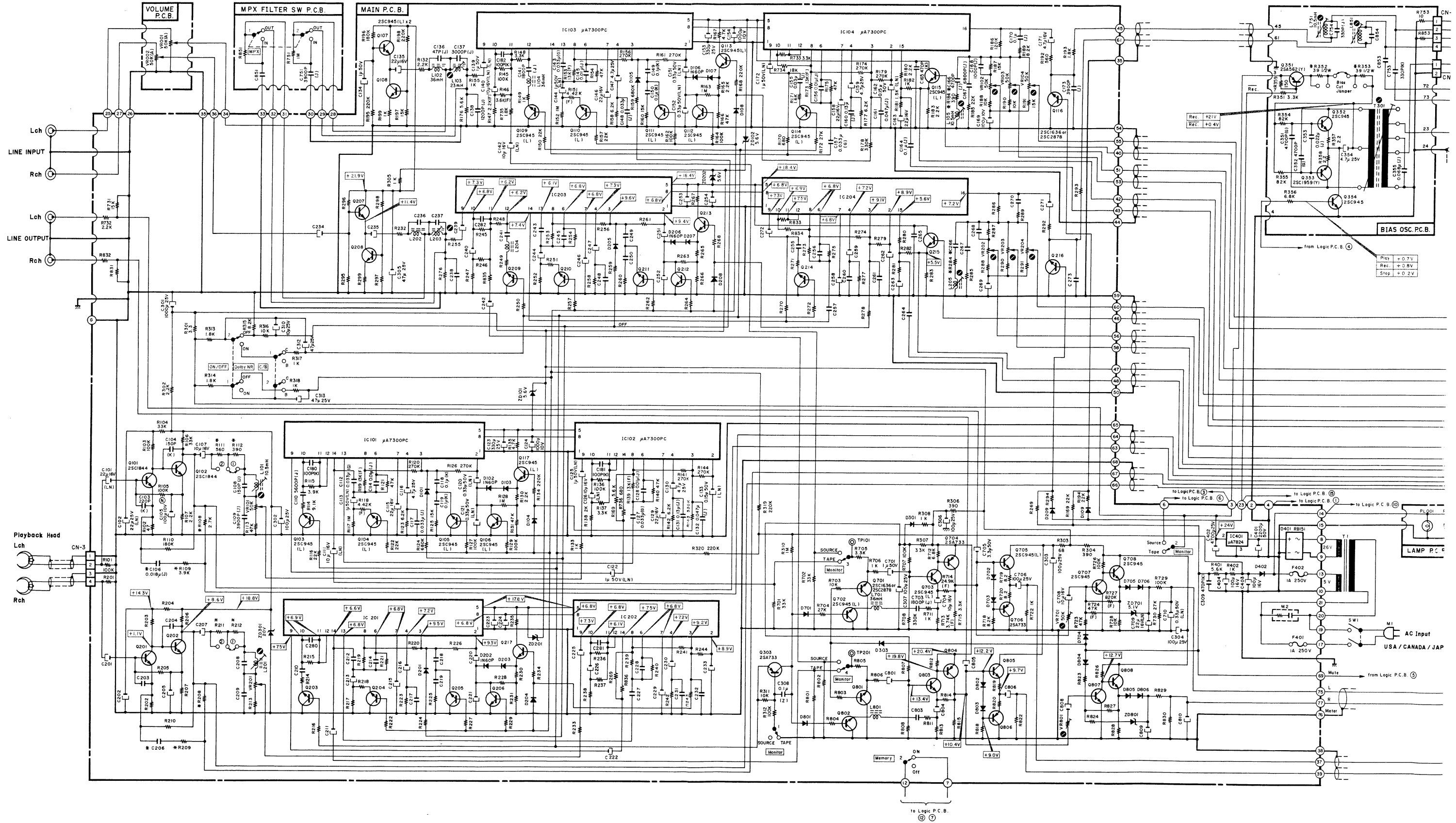
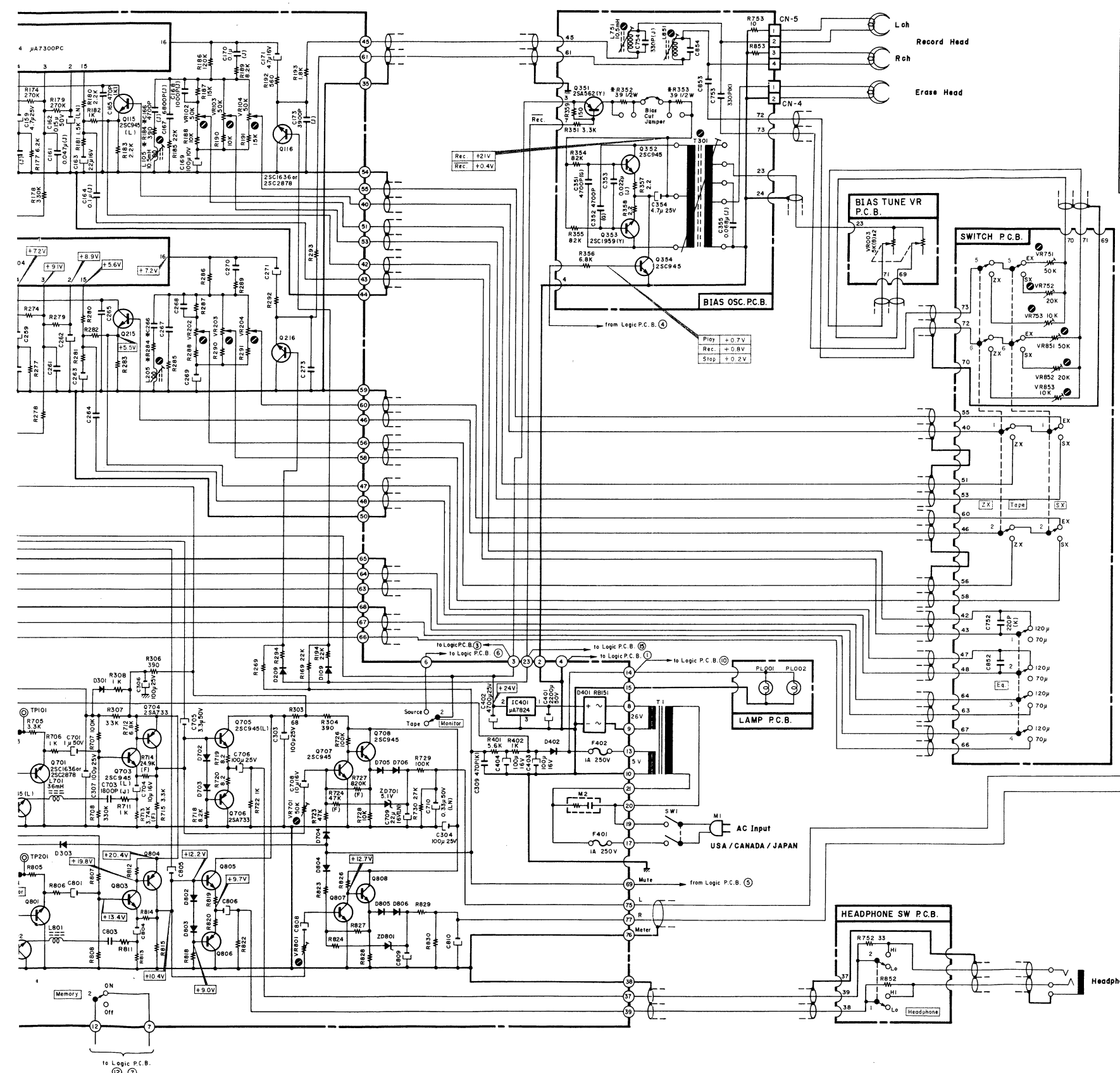
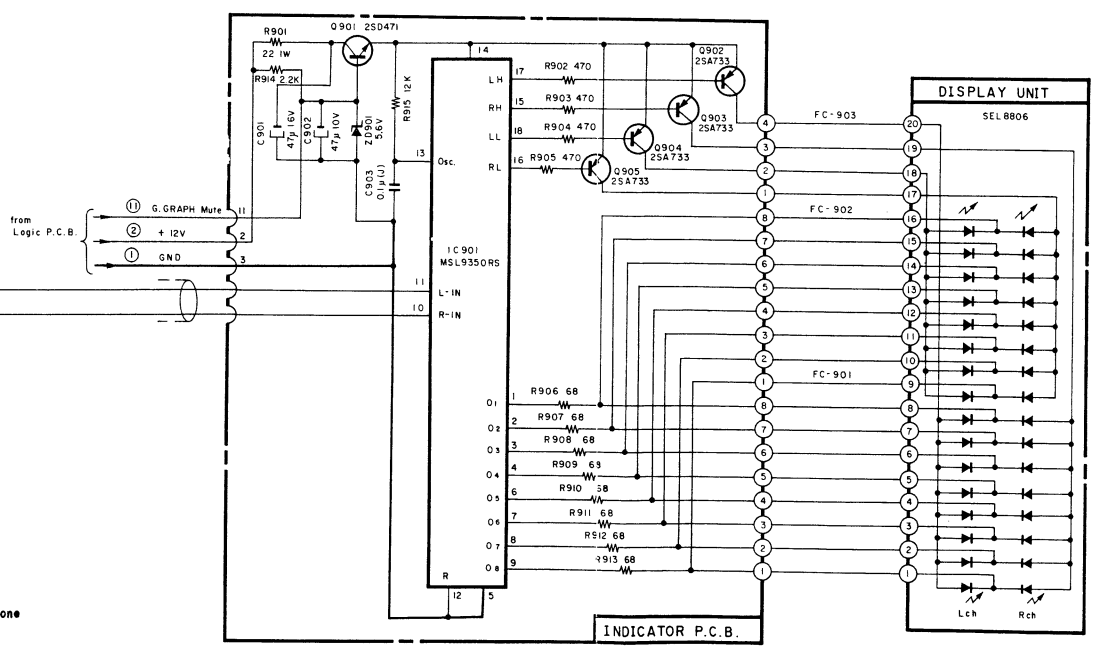
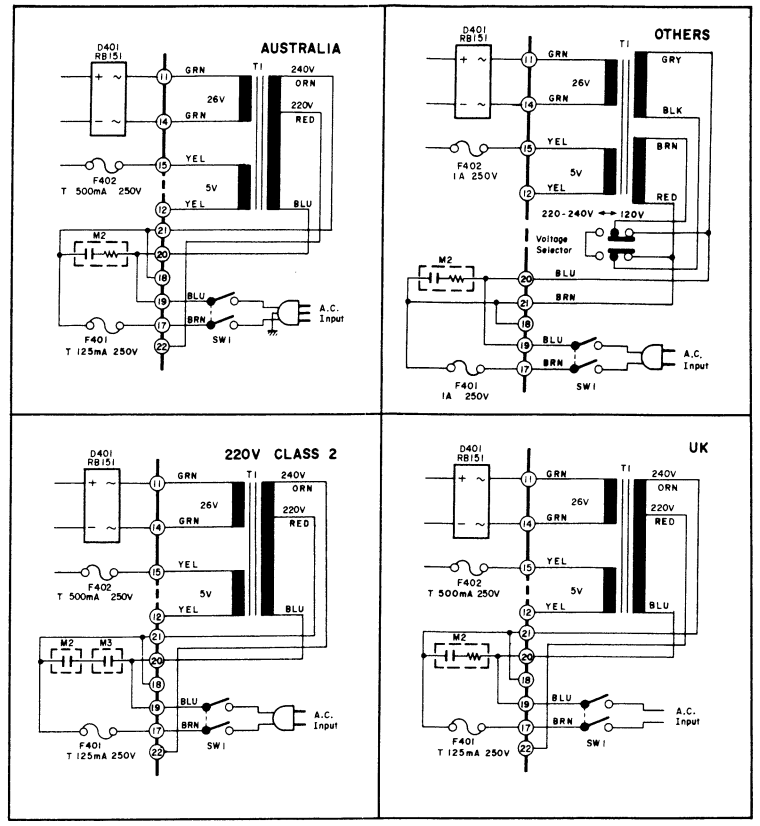


Fig. 13.4.1 Serial No.: A12001121 -



Description	Schematic Ref. Number
Monitor	SW301
Dolby NR ON/OFF	SW302
Dolby NR C/B-Type	SW303
Memory	SW304
Eq.	SW305
ZX	SW306
SX	SW307
EX	—
MPX	SW308
Headphone	SW309



Notes: 1. Diode is 1SS53, 1S953, or 1S1555 unless otherwise specified.  
 2. Resistor and capacitor marked with \* show typical value.

Fig. 13.4.1 Serial No.: A12001121 -

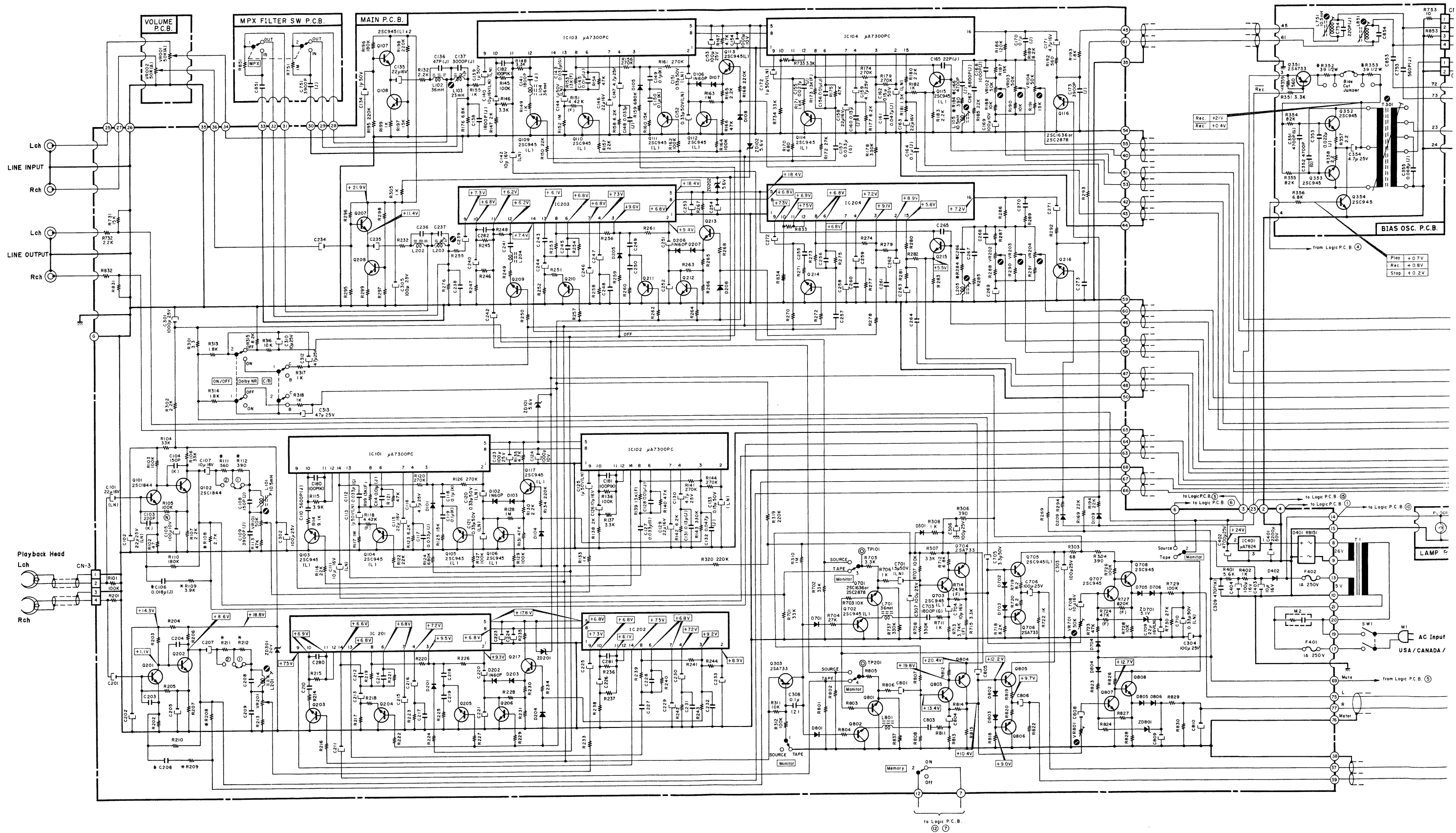
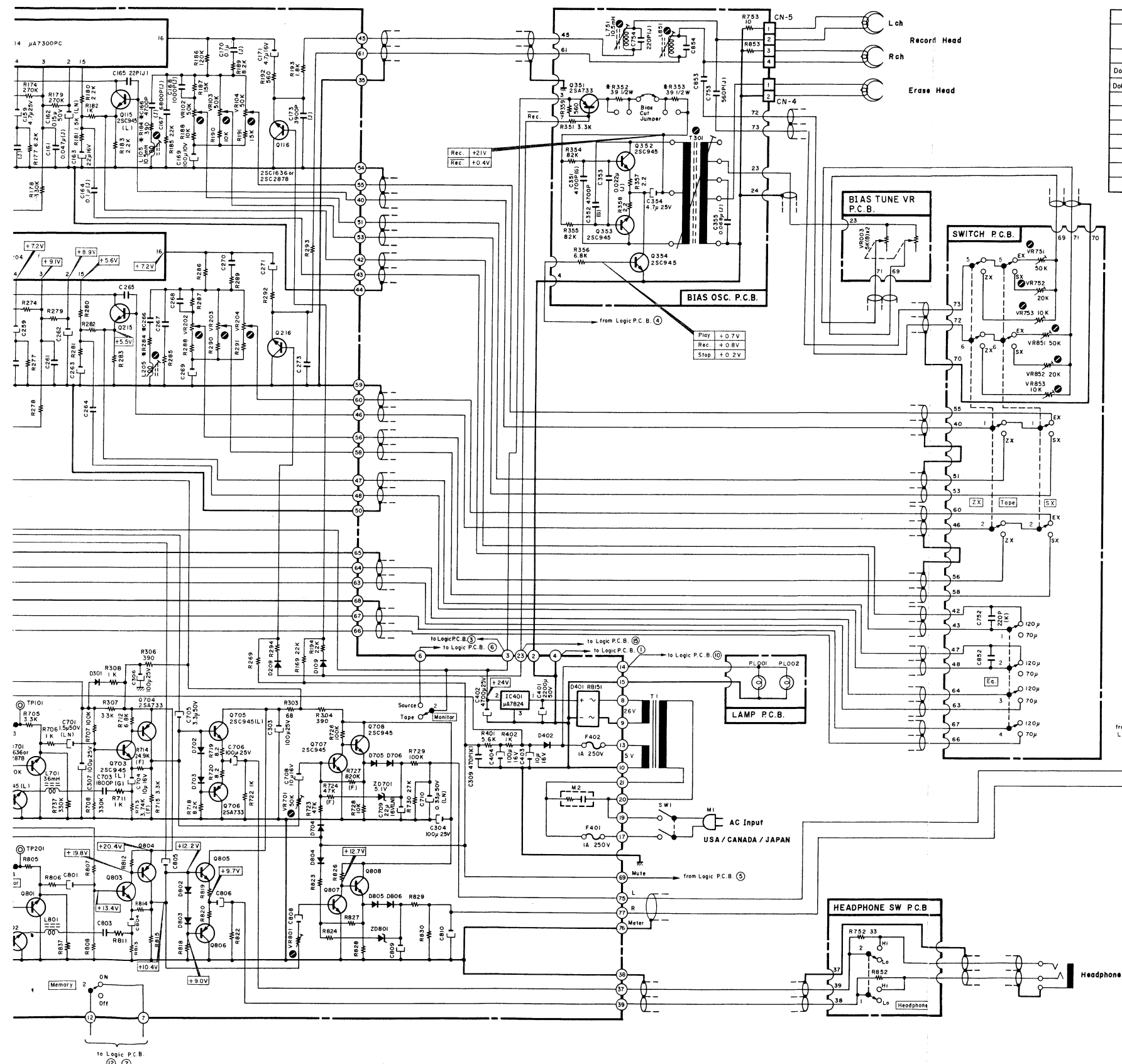
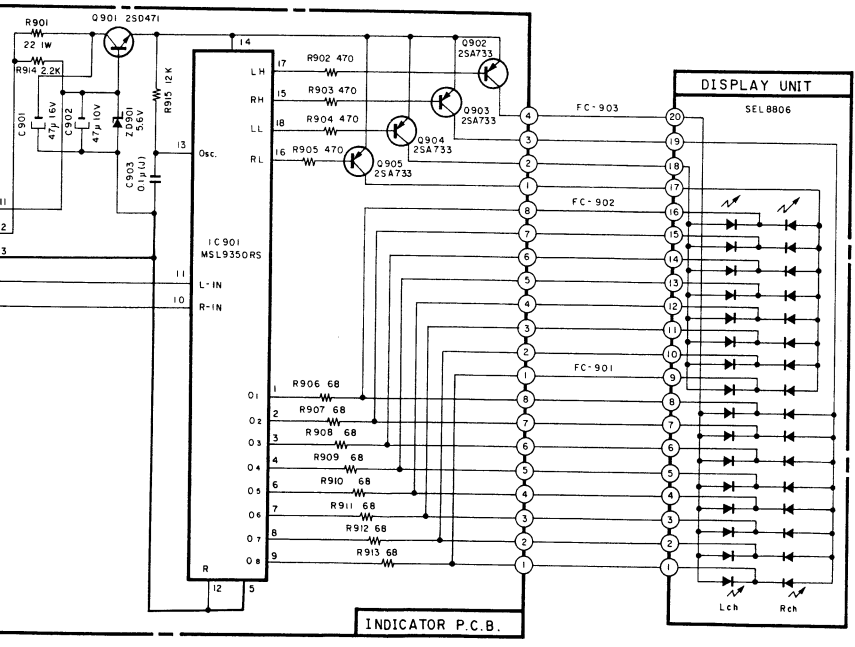
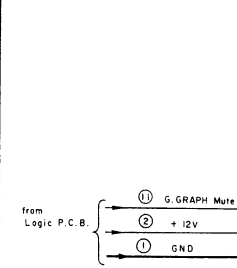
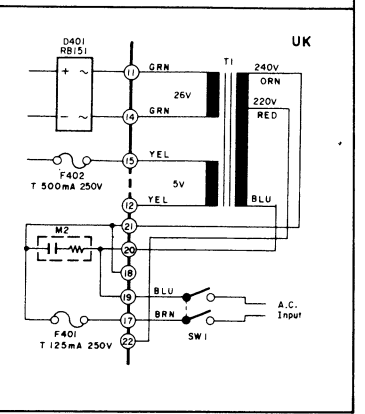
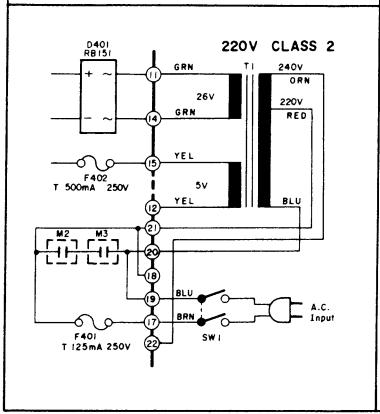
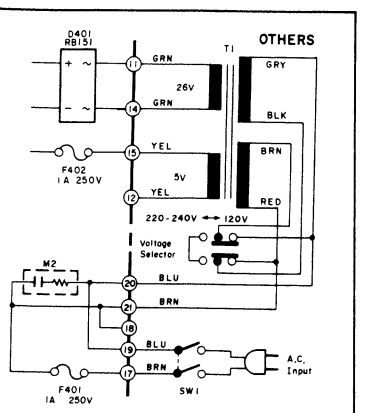
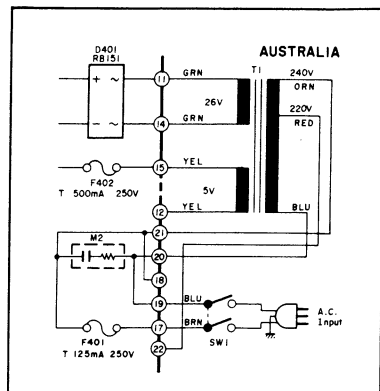


Fig. 13.4.2 Serial Nos.: A12001001 – A12001120



Switch Chart	
Description	Schematic Ref. Number
Monitor	SW301
Dolby NR, ON/OFF	SW302
Dolby NR C/B-Type	SW303
Memory	SW304
Eq	SW305
Z X	SW306
S X	SW307
MPX	SW308
Headphone	SW309



Notes: 1. Diode is 1S553, 1S953, or 1S1555 unless otherwise specified.  
 2. Resistor and capacitor marked with \* show typical value.

Fig. 13.4.2 Serial Nos.: A12001001 – A12001120

## 14. SPECIFICATIONS

Power Source . . . . .	100, 120, 120/220-240, 220 or 240 V AC; 50/60 Hz (according to country of sale)
Power Consumption . . . . .	30 W max.
Tape Speed . . . . .	1-7/8 ips (4.8 cm/sec) $\pm 0.5\%$
Wow and Flutter . . . . .	Less than 0.11% WTD Peak, 0.06% WTD rms
Frequency Response . . . . .	20–20,000 Hz (–20 dB Rec. Level)
Signal to Noise Ratio . . . . .	<b>Dolby C-Type NR on &lt;70 <math>\mu</math>s ZX Tape&gt;</b> Better than 69 dB at 400 Hz, 3% THD, IHF A-wtd rms <b>Dolby B-Type NR on &lt;70 <math>\mu</math>s ZX Tape&gt;</b> Better than 63 dB at 400 Hz, 3% THD, IHF A-wtd rms
Total Harmonic Distortion . . . . .	Less than 0.9% at 400 Hz, 0 dB (ZX Tape) Less than 1.0% at 400 Hz, 0 dB (SX, EX11 tapes)
Erasure . . . . .	Better than 60 dB below saturation level at 1 kHz
Separation . . . . .	Better than 36 dB at 1 kHz, 0 dB
Crosstalk . . . . .	Better than 60 dB at 1 kHz, 0 dB
Bias Frequency . . . . .	105 kHz
Input . . . . .	50 mV, 30 k ohms
Output Level . . . . .	600 mV (400 Hz, 0 dB) 2.2 k ohms
Headphone . . . . .	10 mW (400 Hz, 0 dB, phones level: High) 8 $\Omega$
Dimensions . . . . .	450 (W) x 135 (H) x 289 (D) mm 17-23/32 (W) x 5-5/16 (H) x 11-3/8 (D) inches
Approximate Weight . . . . .	6.4 kg, 14 lb. 2 oz

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